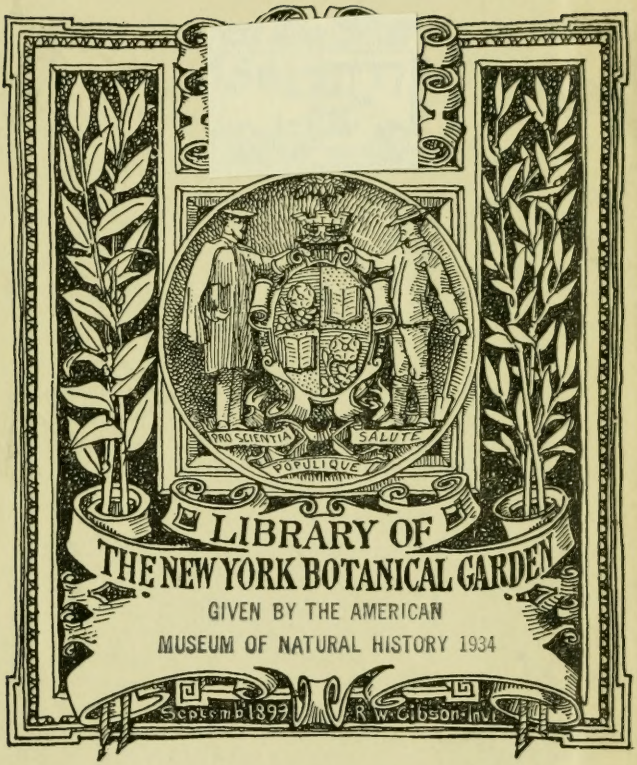
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NARRATIVE

OF

AN EXPEDITION

TO THE

SOURCE OF ST. PETER'S RIVER,

LAKE WINNEPEEK, LAKE OF THE WOODS,

&c. &c.

PERFORMED IN THE YEAR 1823,

BY ORDER OF

THE HON. J. C. CALHOUN, SECRETARY OF WAR,

UNDER THE COMMAND OF

STEPHEN H. LONG, MAJOR U. S. T. E.

COMPILED FROM THE NOTES OF MAJOR LONG, MESSRS. SAY, & KEATING, AND COLHOUN,

BY

WILLIAM H. KEATING, A. M. &c.

PROFESSOR OF MINERALOGY AND CHEMISTRY AS APPLIED TO THE ARTS, IN THE UNIVERSITY OF PENNSYLVANIA; GEOLOGIST AND HISTORIOGRAPHER TO THE EXPEDITION.

IN TWO VOLUMES.

VOL. II.

PHILADELPHIA:

H. C. CAREY & I. LEA—CHESNUT STREET.

.....

1824.

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EASTERN DISTRICT OF PENNSYLVANIA, to wit:

BE IT REMEMBERED, That on the twenty-ninth day of November, in the forty-ninth year of the independence of the United States of America, A. D. 1824, H. C. Carey & I. Lea of the said district, have deposited in this office the title of a book, the right whereof they claim as proprietors, in the words following, to wit:

"Narrative of an Expedition to the Source of St. Peter's River, Lake "Winnepeek, Lake of the Woods, &c. &c. performed in the year 1823, "by order of the Hon. J. C. Calhoun, Secretary of War, under the com- "mand of Stephen H. Long, Major U. S. T. E. Compiled from the "notes of Major Long, Messrs. Say, Keating, and Colhoun, by Wil- "liam H. Keating, A. M. &c. Professor of Mineralogy and Chemistry "as applied to the Arts, in the University of Pennsylvania; Geologist "and Historiographer to the Expedition. In two volumes—Vol. II."

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D. CALDWELL,
Clerk of the Eastern District of Pennsylvania.

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CONTENTS OF VOL. II.

CHAPTER I.

Page.

The party leave Lake Travers. They fall in with large herds of buffalo. Observations upon the rovings of this animal. Meeting with a war party of the Wahkpakotas who manifest hostile dispositions. Arrival at Pembina - - - - 5

CHAPTER II.

Fort Douglas, and Lord Selkirk's colony. Bark canoes. Lake Winnepeek. Fort Alexander. River Winnepeek. Rapids. Portages. Fine falls. Lake of the Woods. North-westernmost point of the boundary line. Rainy Lake river and lake. Fort. Series of rapids and lakes. Dividing ridge. Falls of Kamanatekwoya. Arrival at Fort William - - - 58

CHAPTER III.

Account of the Chippewa Indians. Their usages, manners, and customs - - - - - - - - 151

CHAPTER IV.

Departure from Fort William. Trap formations on Lake Superior. Michipicotton house. Arrival at the Sault de St. Marie. Conclusion of the Journey - - - - 174

CHAPTER V.

General description of the country traversed by the Expedition, designed as a topographical report to the War Department, by S. H. Long, Major United States' Topographical Engineers.

I. Of the country between Philadelphia and the Ohio river - 207

II. Of the country between the Ohio river and Lake Michigan 209

III. Of the country and navigable communications between Lake Michigan and the Mississippi river - - - 212

IV. Of the St. Peter river and adjacent country. Also of the Coteau des Prairies - - - - - - 220

V. Of Red river and the adjacent country - - Page 225
VI. Of the country between Lakes Winnepeek and Superior 231
VII Remarks on a variety of subjects connected with the topography of the country - - - - - - 241
1st. Of the natural features of the country in a military point of view - - - - - - - - *id.*
2d. Of the Indians inhabiting the country traversed by the Expedition - - - - - - - 244
3d. Statements relative to the elevation of different parts of the country - - - - - - - 247
4th. Of the accompanying Map - - - - 250

APPENDIX.

Part I.—Natural History. § 1. Zoology, by Thomas Say.
A. Class Polypi—Order Vaginati - - - - 253
B. Class Pisces - - - - - - 254
C. Class Mollusca - - - - - - 256
D. Class Vermes—Order Cryptobranchia - - - 266
E. Class Insecta—Order Coleoptera - - - - 268
Orthoptera - - - - 297
Hemiptera - - - - 298
Neuroptera - - - 303
Hymenoptera - - - 310
Diptera - - - - 356
§ 2. Botany. A Catalogue of plants collected in the North-western territory, by Mr. Thomas Say, in the year 1823. By Lewis D. de Schweinitz - - - - - - 379
Part II.—Astronomy - - - - - - 401
Part III.—Meteorology - - - - - 417
Part IV.—Indian Vocabularies - - - - 547

NARRATIVE OF AN EXPEDITION

TO THE

SOURCE OF ST. PETER'S RIVER, &c. &c.

CHAPTER I.

The party leave Lake Travers. They fall in with large herds of buffalo. Observations upon the rovings of this animal. Meeting with a war party of the Wahk-pakotas who manifest hostile dispositions. Arrival at Pembina.

THE fort of the Columbia Fur Company has been determined, by Mr. Colhoun, to be in latitude 45° 59′ 52″ north, and in longitude 96° 34′ 30″ west; the magnetic variation at this place amounts to 12° 28′ 50″ east. The lake upon which it stands is about fifteen miles long; in breadth it scarcely exceeds one mile. It is the handsomest of the three lakes which we saw near the head of the St. Peter. It is incased more than one hundred feet below the adjoining prairies, but the valley in which it lies is about double the breadth of the lake itself, and is filled with large fragments of primitive rocks. A view of this lake has been given in the Frontispiece to volume second, it includes the Company's fort, the Indian lodges near it, and also a scaffold, upon which the remains of a Sioux had been deposited. The horizon is bounded by a distant view of the Coteau des Prairies. The lake has received its present ap-

pellation, from the circumstance that it is in a direction nearly transverse to that of the Big Stone and Qui Parle Lakes, these being directed to the north-west, while Lake Travers points to the north-east. By the Indians it is called Otter-tail Lake, from its form. On the 26th of July, we left the fort, and, as we ascended the bluff in the rear of the establishment, we fired a salute in return for that which we had received on our arrival. Having ascended the St. Peter up to its head in Big Stone Lake, our next object was to proceed "to the intersection between Red river and the 49th degree of north latitude;" and as we were informed that that stream runs nearly north and south, we determined to travel the usual route to Pembina and Fort Douglas, two of the posts of the Hudson's Bay Company, between which the 49th parallel was reported to strike the river.

On leaving Lake Travers, our party was strengthened by the addition of Mr. Jeffries, one of the Company, who agreed to guide us to Pembina, and by four Frenchmen, who were returning to that place, with six carts which had been employed to convey the families and baggage of several Swiss emigrants, from the British settlements to the St. Peter. Of these carts, we chartered four to convey our baggage and provisions. As it was expected that, after having travelled forty miles, we should meet with no Dacotas, it was agreed that when Renville should have accompanied us that distance, he would be at liberty to return to the fort where business required his presence. Vague reports of large parties of Dacotas had been circulated for some days past, and a rumour that five hundred lodges of the Yanktoanan were collected on Shienne river, made us desirous of being accompanied by Wanotan, which he readily agreed to do; finding, however, that these re-

ports were groundless, and that this excursion would be inconvenient to him, as it would deprive him of the opportunity of laying in a store of buffalo meat for winter, we reluctantly acquiesced in his wish to be released from his promise.

The first day of our journey was unpleasant; it was across dry prairies. We stopped to dine upon the banks of what is termed Mûshtînchâ Watapan, (Hare river.) At the time that we crossed it, the stream had disappeared; a little stagnant water, collected in hollows, offered but an unpleasant drink for ourselves and our horses. This valley is a mere trench in the prairie, into which the waters collect after heavy rains; it affords them a passage to the more permanent streams. Its bed is about fifteen yards wide. The woods became very scarce as we advanced, only a few points being seen at a distance; the plain upon which we were travelling was apparently boundless; it was covered with a short grass of a pale or yellowish-green hue. The eye of the mineralogist could not detect a single stone within a mile's travel, and the few that were observed during the day, were rolled and uninteresting. In some places pebbles were very thick, as if we had been travelling upon the bed of some former river or lake; but the mind endeavours in vain to establish limits to the vast expanse of water, which certainly at some former day overflowed the whole of that country.

On the bluff which encloses the lake we saw a few small tumuli, the last that were observed by our party; we have not been able to hear of the existence of any to the north-west of this place. Thus have we, during this expedition, traced these ancient Indian works from Irville in Ohio to the head of Red river, upon a distance of upwards of eight hundred miles in a direct line, and nearly double that amount ac-

cording to our devious route. We have occasionally met with them very abundant, bearing evident signs of the most consummate design, and yet we are as unable to form a correct estimate of the authors of these extensive works, of the period at which they were executed, and of the objects for which they were erected, as any of the travellers who have preceded us. If for the purpose of commemorating the names and heroic deeds of warriors or statesmen, how inadequate the means to the object proposed! How inferior in this respect to the splendid and permanent pyramids of Cheops, of Cholula, of Teotihuacan; yet the labour which has been wasted upon these tumuli would, if concentrated, have more than sufficed to erect any one or perhaps all those pyramids. In looking back to the numerous tumuli which we have seen, we cannot help admitting in the words of one of our fellow travellers, that "the splendid antiquities of the East minister to the pride of man; they are glorious trophies of victory, gained by human genius and power over time. History tells us the interesting circumstances connected with them; they, in turn, confirm her story. But here ferocious conquerors have torn her pages, or they remain unfilled by a posterity forgetful that it is a duty to cherish her, not only for instruction's sake, but also that the benefactors of mankind may receive their merited share of fame, and that the censure of after ages may light upon those who have proved the tyrants of their species. Here we find nothing to rescue "ab injuria oblivionis." So rude and concise are the epitaphs, so faint and time-worn the characters of these tombs, that we strain our eyes in vain, we can read no further than the Hic jacet—"*

* Mr. Colhoun's MS.

The dullness of our morning ride was dissipated by the distant view of the buffalo grazing upon the prairie. We shall not attempt to depict the joy, which the first cry of "buffaloes in sight," created in the whole company; all were in activity. The practised hunters immediately gave chase to the buffaloes, and before the sun set, three of these noble animals had been slain. We encamped early to enjoy what, to many of our party, was an entirely new scene. The spot which we were obliged to select, was utterly destitute of wood, and the only fuel which we could procure was the buffalo dung, which lay profusely scattered over the prairie. This made a fine warm fire, giving out no smell. The meat was cooked, and eaten with great delight. The party never were, perhaps, in greater spirits than during that evening. They considered themselves almost on their way home. For the first time they saw abundance of game before them, and a prospect of its continuance for a few days, whence they anticipated ample supplies of stores in the camp.

The spot of our encampment is called, both by Indians and traders, Buffalo Lake; it is only an extension of Lake Travers, being separated but by a marsh overgrown with high grass, through which a canoe can navigate at all times. It is immediately below this place that the lake assumes the characters of a stream, and receives the name of Sioux or Swan river. Mr. Colhoun endeavoured to determine the situation of this place, but a high southerly wind impeded his observations. Previous to encamping, we passed a party of squaws engaged in conveying to their camp some slices of fresh meat to jerk; their fellow labourers were dogs. Each of the dogs had the ends of two poles crossed and fastened over the shoulders, with a piece of hide underneath to prevent chafing. The other extremi-

ties dragged on the ground. This sort of vehicle was secured to the animal by a string passing round the breast, and another under the abdomen; transverse sticks, the ends of which were fastened in the poles, kept these at a proper distance, and supported the meat. This seems to be the only mode of harnessing dogs, practised among the Sioux; we believe, they never use them in teams, as is customary with the traders. Some of the gentlemen of the party went to the Indian camp, and were rewarded for their pains by eating of the swan's meat, which we had not yet had an opportunity of tasting; they found it very indifferent.

The next morning, as we proceeded, the buffaloes began to thicken before us; in every direction numbers of them were seen. They generally collected in herds of thousands together, keeping at a distance from us, though sometimes suffering us to approach very near to them, and, in some cases, indeed, running through our line of march. We stopped in the morning at a few Indian lodges, which we were pleased to find were those of our acquaintance Wanotan, the Yanktoanan chief. He invited us to partake of some fresh buffalo meat, which, being obtained from a fat cow, far exceeded in quality that which we had tasted the preceding evening. Wanotan assured us, that from the information which he had obtained, he thought we would not meet with any Dacotas after passing the Bois des Sioux, a small grove at a distance, and beyond which we expected to encamp that night. Some of the gentlemen having expressed a desire to see the chief hunt the buffalo with his bow and arrow, he complied with their request. In the mean while, the body of the party continued their route, crossed the dry bed of Sioux River, and proceeded as far as the Bois des Sioux, where they

formed their encampment at an early hour, owing to a very heavy and continued rain; at this place, they were overtaken by the gentlemen who had gone out with Wanotan, and were much interested by the recital of his address and success in hunting. These gentlemen had likewise killed a couple of calves, which gave us an opportunity of tasting the buffalo veal; we found it good, but not to be compared to the beef of that animal. The Indians, we believe, never kill the calves when they can help it. We saw one of these little creatures that had been brought to Lake Travers, and which they intended to domesticate; it was a male calf, about two or three months old, of a uniform dun colour; the hump had not yet begun to form; it almost continually made a grunting noise, not unlike that of a hog. A domestic cow nourished it without discovering any thing more than occasional uneasiness at its hard sucking, though at first she submitted only through force.

The squaws at Wanotan's lodge were engaged in jerking the meat and dressing the skins which he had obtained. We had some curiosity to observe their mode of operating. The meat was cut up in thin and broad slices and exposed on poles, all round the lodge. Two days of exposure to a hot sun are sufficient to dry the meat so that it will keep. The skins are dressed in a very simple manner; the green skin is stretched on the ground by means of stakes driven through its edges; then with a piece of bone, sharpened to a cutting edge, about an inch wide, and similar to a chisel, the softer portions on the flesh side are scraped off, and with an instrument of iron similar to the bit of a carpenter's plane, the hair is removed from the outside. If the operation be interrupted here, the product is a sort of parchment; but if the skin be intended for moccassins or clothing, it is then worked with the hands

in the brain of animals, which gives it the requisite degree of softness. In order to qualify it for exposure to moisture, the skin is sometimes smoked, but this deprives it of its natural white appearance. When the skin has been prepared with care, but not smoked, the shirt and leggings made from it, with broad edges, left without the seam and cut into fringe, form a very handsome dress. Instead of the brains of animals, strong soap-suds could be used in the dressing of the skin, and we have it upon the authority of Lawson, that "young Indian corn, beaten to a pulp, will effect the same as the brains."*

We observed that Wanotan, used the common Sioux bow, not exceeding four feet in length; the arrows were proportional. At Wapasha's some of the party observed a bow of from five to six feet, which he was engaged in rasping; but perhaps it was intended to be cut off to the usual size.

Our route that day led us near to Sioux river; for some distance we had on our right a ridge of about thirty or forty feet in height, which as we advanced inclined to the north-east and soon disappeared. By the Dacotas. Sioux river is called Kåntôkô, from a thicket of plum bushes near its head. A few insulated patches of wood seen scattered over the prairie form the "Isles des Bois" of the voyagers. We were shown, at a distance, on the west bank of the river, an elevation, called by the Indians the Thunder's Nest; at its base there are a number of salt ponds.

As we were travelling along the prairie that morning, we were delighted to see our former companion, Lieut. Scott, from whom we had been separated for upwards of

* Lawson's New Voyage to North Carolina, ut supra, p. 209.

three weeks. By the most active exertions, Mr. Scott had been enabled to descend the Mississippi to Prairie du Chien and return to Fort St. Anthony, then to ascend along the St. Peter a certain distance, when his horse failing, he was obliged to retrace his steps to the fort. After which he reascended the river, and finally overtook us, having travelled upwards of eight hundred miles, part of which was performed alone, and without any other subsistence than that obtained by hunting. His anxiety to overtake the party had led him to neglect his health and comfort during that journey. On his arrival, he took the direction of the escort which, until then, Mr. Denny had commanded. Our numbers remained, however, the same, as Renville parted from us that morning.

The Bois des Sioux is supposed to be the northernmost limit of the undisputed property of the Sioux on Red River. Beyond this they never hunt without being prepared for war, as the prairies between this place and the Wild Rice River to the east, and Turtle River to the west of Red River, form a sort of debatable land, which both Chippewas and Dacotas claim, and upon which both frequently hunt, but always in a state of preparation for hostilities.

After travelling nine miles beyond the Bois des Sioux, the party came to a stream, called Red River. This stream branches out, at about four miles above the place where we struck it; one of its branches rises, as we have mentioned, in Lake Travers, but is dried up during some parts of the year. The other rises in Otter-tail Lake, which is in the neighbourhood of the head of the Riviere de Corbeau. By the Indians this branch is called Otter-tail River, and the stream continues, after the junction of the two, to be called by them Sioux or Swan River, until it receives the Red Fork

that rises in Red Lake; they then apply to the stream the name of Red River; while the traders have bestowed this name to the branch that rises in Otter-tail Lake.

That lake is, as we were informed by one of our carters, situated about one hundred and fifty miles in a north-easterly course from the head of Lake Travers; it is, according to his statement, about twenty-four miles long, and from four and a half to five miles wide. From the point at which we crossed Red River, Otter-tail Lake bears north-east, and is distant about seventy or eighty miles. Near to the head of the river are high lands, which were visible at various times during the day, they are called the "Montagnes des Feuilles," or Leaf Mountains. Mr. Jeffries described the country in that direction as being full of small lakes and "islands of wood." We forded Red River, it was about twenty-five yards wide, and about two and a half feet deep. Its current was very rapid; the colour of its waters was white, owing to the muddy nature of its banks. As we were crossing it one of the carts was by the carelessness of the driver upset, just as it descended the bank, so that its contents got wet; as these consisted principally of the jerked meat, we were obliged to stop on the opposite bank to dry it, lest it should spoil. This detained us a long while, and afforded to some of the party an opportunity of shooting buffalo. The harassed state of our horses had obliged Major Long, that morning, to issue an order to prevent the "running of the buffalo," as it is called here, or the chasing of them on horse-back. Such a chace frequently extends over four or five miles, and the excitement which the horses themselves derive from it, is sometimes sufficient to impel them to run until their strength is completely exhausted. This measure, prescribed by a prudent care of our horses, was likewise in accordance with the

dictates of humanity, for all who are not hunters, callous to the sight of a tortured animal, must regret the very indiscriminate slaughter which is usually made of the buffalo; yet it must be acknowledged that the sport has something dignified and highly interesting, and that it requires no small share of self-control to remain a passive observer of it. Notwithstanding the general orders issued to that effect, about fifteen buffaloes were killed in one day.

After having dried our meat, we continued our journey, and soon discovered, at a distance, a herd of elk, (Cervus major,) to which three of the gentlemen immediately gave chase. This herd consisted of about fifty or sixty elks. After having approached on horseback as near as they could, without alarming them, the gentlemen dismounted, and crept for about a quarter of a mile on their hands and knees, leading their horses, until they came within eighty yards, when they all fired, and one of the herd fell. Mr. Colhoun, who was one of the party, then mounted his horse and pursued the herd for more than a mile. His horse being the best in the company, he got up with them in half that distance, but the horse was so much alarmed by the appearance of the elks, having probably never seen the animal before, that no spurring on the part of the rider, could urge him on near enough to give effect to the pistol shots which he fired. While Mr. Colhoun was chasing them, he observed that the elks in the rear would frequently stop to look at him. When in herds, elks are easily overtaken, but when they are alone it is much more difficult. This animal is however represented as being short-winded. The elk are generally approached in a creeping posture; this mode is also used in hunting buffaloes, by those whose horses are not very fleet. In order to protect their guns from the moisture of the grass, as well as to prevent them from being accidentally

cocked, it is usual for the hunters to cover their gun locks with a piece of leather. The animal which our companions killed proved to be a female; they were engaged until near sunset in skinning and cutting it up, so that it was late in the evening when they reached the camp; this they found in a state of activity, owing to the adventures which the party had experienced in the afternoon.

While riding quietly across the prairie, with the eye intent upon the beautiful prospect of the buffaloes that were grazing, our attention was suddenly aroused by the discharge of a gun in the vicinity of the river, which flowed about half a mile west of the course that we were then travelling. While we were reckoning up our party, to know if any had straggled to a distance, we saw two Indians running across the prairie; their number increased very soon to twelve or fifteen, who hastened towards us, but as soon as they came near our party, stopped and examined us with minuteness; after which they presented their hands to us; we gave them ours. It was immediately observed that they were in a complete state of preparation for war, being perfectly naked, with the exception of a breech-cloth. They had even laid their blankets by. All of them were armed with guns, apparently in very good order, or with bows and arrows, and some with both. Their appearance though at first friendly soon became insulting. Their party had, in the mean while, increased to thirty or forty, so that they outnumbered ours. We found that they belonged to the Wahkpakota or Leaf Indians, whose character, even among their own countrymen, is very bad. Mr. Jeffries, who was to act as interpreter, being away, we availed ourselves of Mr. Snelling's knowledge of the language to communicate to them, in the course of conversation, our objects and intentions, as well as

the friendly reception which we had met with on the part of Wanotan and the other Indians whom we had seen. In a tone rather imperative than courteous, they expressed their wish that we should go to their camp and speak to their old chief. This we declined doing, informing them that some of our party had separated from us, and that we had a long journey to travel. They pointed to the sun, which was then low in the horizon, and added that we had no time to proceed further, and that we had better encamp with them that night. As an inducement, they added that we should be provided with squaws, whose beauty they commended much. This offer was alone sufficient to stamp them as worthless members of their nation, for the Dacotas agree in this respect with the Sauks, considering, as Wennebea expressed himself, that "men were not made like dogs for promiscuous intercourse." In this particular as well as in many others, the Dacotas differ materially from the Indians of the Missouri, whose manners Mr. Say described in the "Account of the Expedition to the Rocky Mountains." Major Long declined their invitation, whereupon they insisted that our party should encamp at a neighbouring grove which they pointed out to us, as they observed that this would be a convenient place for their chief to come and smoke with us in the evening. While this conversation was going on, Mr. Say remarked that, either through design or accident, the Indians had intermixed themselves so much with our party, that every one of our number was placed between two or more of theirs. Mr. Snelling overheard them talking of our horses, admiring them, and examining the points of each; one of their band had even ventured so far as to ask him which horse was considered the best of the party. Finding that all further conversation was a waste of time, and

having given them as much tobacco as our small stock of Indian presents allowed us to spare, Major Long mounted his horse, and gave his men orders to march. The Indians attempted no opposition at the time; but after we had travelled about a quarter of a mile, they following in our rear, a gun was fired at some distance on the prairie, to the right of our line, and a number of mounted Indians were seen in that direction, coming towards us. Those who had followed us, then made a signal to them that we were white men; and ran up to us to desire that, as their chief was then coming up, we would stop and shake hands with him; the party halted, until the mounted Indians had come up and greeted us in the usual manner. Observing that their chief was not among them, Major Long again set his men in motion, but before we had proceeded far, several of them ran up to the head of the line, fired their guns across our path, reloaded them immediately, and formed a crescent in front of the leader, to prevent him from proceeding. At that time the number of the Indians must have been about seventy or eighty, while ours amounted only to twenty-five. Their intentions could not be misunderstood. It was probable that they did not care much to harm our persons, but they were anxious to pilfer our baggage, and especially to secure our horses; and as we were resolved not to part with them without a struggle, it was evident that the first gun fired would be the signal for an attack, which must end in the total destruction of our party; for the number of the Indians, and their mode of dispersing upon the prairie, and continually changing their situation during a skirmish, would have given them a very great advantage over us, as, in order to protect our horses and baggage, we would have remained collected in a body, and exposed to their arrows and balls.

But even in such a case, they must have lost some of their number, and this consideration, all-powerful with Indians, probably induced them to defer their attack until night, when their advantages would be still greater; and hence their anxiety that we should encamp in their vicinity. Had Major Long been perfectly free to act as he pleased, he would have avoided all further conversation, and have proceeded the whole night without stopping at all that evening; but this he could not do as long as some of the gentlemen were separated, for in such a case they would have been easily cut off by the Indians. It was with a view to give them a chance to overtake us, that he had continued the conference so long, and that he finally decided upon encamping at a point of wood then in sight, but further than that which had been proposed by the Indians. With this view, the Major ordered the men to march; when one of the Indians advanced up to the head of the line, stopped the horse of the leader, and cocked his gun. The soldier who was there, and whose name was George Bunker, immediately imitated this action, determined to be prepared for a shot as soon as his antagonist; at this moment Major Long marched up to the head of the line, and led off the party. There can be no doubt that the resolution thus manifested had a great influence in preventing the Indians from making an immediate attack. It was night before we reached the place where we intended to halt. The tents were not pitched. The position was selected at a distance from the river, as the banks of the stream are skirted with woods in which a number of Indians were distinctly seen. Our horses were staked with very short ropes, the arms were all examined and loaded afresh, six centinels placed on duty, and the rest of the party remained up ready to resist any attack; a large fire was kindled in order to ap-

prize our companions of our situation; and in this unpleasant uncertainty about their fate we remained until they made their appearance. They had fortunately seen no Indians. The supply of provisions which they brought was tasted, but found inferior to the buffalo. The fat of the elk partakes of the nature of tallow, and is much less fusible than that of other animals, so that unless eaten very hot it consolidates and adheres to the mouth. The best part of the animal is the udder, which, being fixed upon a forked stick, was roasted before the fire. As soon as our meal was finished the fire was extinguished. A few Indians had accompanied us to our camp, but all withdrew after a while except an old worthless man, who was recognized by several of the party, as his character was notorious at Fort St. Anthony. This fellow was one of the most impudent of the band, ceaselessly begging for tobacco, whiskey, &c. When he was told that the party had no whiskey with them, and that they had given as much tobacco as they could spare, he observed, with the greatest effrontery, "what then can you give me?" Observing that Mr. Keating was drinking out of his canteen, one of these Indians came up to him, and extended his hand, asking for whiskey; being told that it contained water and not whiskey, he attempted to take the canteen, which was, however, resisted.

The party being again safely united, Major Long considering that if an attack was intended, it would be made a short time before daylight, determined to allow the horses to rest until midnight, when the moon, rising, would make it pleasant and safe to travel. Accordingly at that hour we resumed our line of march. Our preparations for departure were made with the greatest expedition and silence, so as not to be observed by the Indians at a distance, and to avoid disturbing the old man that was sleep-

ing or affecting to sleep under one of our carts; in the latter purpose, however, we failed; the old man awoke, and seeing what we were about, he left us immediately, notwithstanding the attempt made to amuse him with conversation until we should be ready to start; but we could not detain him; we saw him walk over the prairie, and by the light of the moon traced his figure until he approached near to the river, when he disappeared in the woods. This was the last Dacota whom we saw.

Our march was continued without interruption for six hours; we have reason to believe that it is to this sudden departure that we owe our having escaped an attack from that band.

It may be interesting to mention, that the Dacotas have means of communicating information to those of their party that are at a distance. We had an opportunity of observing these telegraphic communications in more than one instance. In this case, in order to inform the mounted Indians that were seen at a distance on the prairie that we were white men, and that they might approach without fear, a few of them separated from the group, and ran round a circle several times, a signal which was immediately understood by their friends.

Had not our attention been seriously occupied by the hostile dispositions manifested by these Indians, we should have taken much interest in witnessing one of their great diversions. Some time before we met them, we observed a fine buffalo bull, who seemed to challenge a combat with our party; he travelled for about two miles abreast of us, and almost within gunshot; his eyes were intently bent upon us. Though occasionally driven off by our dog, he would constantly return, and continue in a parallel line, as though he were watching our motions. This fearless cha-

racter, so unlike that of buffaloes in general, excited our surprize and admiration; and accordingly we determined to spare him, and see how long he would continue to travel with us. But the noble animal offered too strong a temptation to the Indians; seeing him stop at the same place where we had halted, a few of them, especially the youngest of the party, ran up to him, and in a few moments several balls, and perhaps a dozen of arrows, had reduced the animal to the last gasp. They then approached on all sides, and while he was engaged in keeping off those on his left, the youths on his right would come so near to him as to draw his attention to them; the animal appeared galled, his rage was extreme, but his weakness was equally so. At length some of them came very near to him, and caught hold of his tail; at that moment he was observed to be tottering; they all drew off, the animal fell, and after two or three convulsive throes he expired; a shout from the Indians announced the death of their victim. This seemed to be a schooling for the youngest of their party, a few of whom were mere boys. Mr. Seymour took a sketch of this singular diversion, which is represented in Plate 7; it is taken at the moment when the animal is tottering, but it does not express all the fire and rage which he manifested to the last.

When we stopped for breakfast the next morning, we heard some guns fired in the woods, which convinced us that some of the marauders were still in our vicinity; we continued our journey, however, without any impediment, avoiding the firing of guns, the separation of any of the party, or any other measure which might warn the Indians of our situation. We encamped at an early hour. Our journey across the prairies was extremely unpleasant; there was nothing to relieve the monotony of the scene;

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Engraved by J. Hill.

the buffaloes were fast diminishing in numbers, besides which, the regret, which those who were fond of hunting experienced at the fine chances which they were necessarily losing, abated the interest which we should otherwise have felt in beholding this imposing monarch of our prairies.

The calm repose of these prairies seemed to be more disturbed during the night, as the lowings of the buffalo on the west bank of Red river were then frequent and distinct; they contrasted strongly with the barkings of the wolf. During the first few nights that followed our adventure with the Indians, it was deemed advisable to increase the number of our sentinels, and with a view to stimulate them to vigilance, the officers and gentlemen of the party undertook the duty of watching in turn. These nights made a more lively impression upon several of the party, than any of those that had preceded them. The beautiful and boundless expanse of the prairies, as seen by the bright moonlight which we enjoyed during that period, the freshness of the night air, the stillness of the scenery, interrupted only by the melancholy howlings of the wolf, and the prolonged lowing of the buffalo, the recollection of the dangers which had lately threatened us, and against the recurrence of which we were then watching, all these were likely to suggest to the mind melancholy yet not unpleasant reflexions.

In such a state the mind is apt to magnify and to form an incorrect opinion of the various objects which present themselves to the eye. It was, while watching on the night of the 29th, that Mr. Say's attention was suddenly directed to an object in the prairie. He saw it approaching with caution, and immediately the idea that it was probably an enemy, induced him to creep in the direction from which the object approached; it had the aspect of a wolf, but this he imme-

diately conceived to be a stratagem of the wily Indian, who, to conceal his approach, had assumed a false garb. So intent was he upon this idea, that he scarcely considered it possible that it should in reality be but a wolf. He felt a strong temptation to fire upon it, but the fear of alarming the whole camp induced him to desist, and he was only satisfied of the true nature of the object of his attention, when the latter, alarmed at the rustling made by Mr. Say's creeping through the grass, scampered off on his four legs, with a rapidity and agility that satisfied him that this was its natural posture.

At this encampment Mr. Colhoun estimated Red river to be twenty yards wide, and its current about half a knot per hour. Its banks are boggy, and the water is thickened with particles of the rich light-blue clay through which it flows.

On the morning of the 30th we resumed our march at a very early hour, proceeding by moonlight. We crossed before breakfast a stream called Buffalo river, which, from the muddiness of the banks, offered some difficulty. It is about eight yards wide. In the afternoon we reached Menomone or Wild-rice river, the wading of which was more difficult; it was, however, effected without accident; but a very heavy shower, which fell immediately after we had crossed the river, detained us a long while; after which our tents, baggage, &c. were found so wet that it was deemed expedient to take advantage of the returning sunshine to dry them; our situation in the valley being a very exposed one, we removed our tents to an eminence in the neighbourhood, where we found a position favourable for defence in case of need. Wild-rice river is twelve yards wide, where we crossed it, which was nine miles above its mouth; it was about three feet deep at the time. On

that day we saw but one buffalo, it was at a late hour in the afternoon. This animal was killed by one of the party, and was the last that we saw. Mr. Colhoun has endeavoured to trace the extent of country over which the buffalo is known to rove at present, or to have formerly inhabited. Every thing that connects itself with the history of this strange and interesting animal, which by an old author is described as resembling "in some respect a Lion, in other the Camels, Horses, Oxen, Sheep, or Goats,"* must be important to collect, for its numbers have diminished so rapidly within a century, its rovings have been so much restricted, that there is reason to apprehend that it will soon disappear from the face of the land.

The buffalo was formerly found throughout the whole territory of the United States, with the exception of that part which lies east of Hudson's river and Lake Champlain, and of narrow strips of coast on the Atlantic and the Gulf of Mexico. These were swampy, and had probably low thick woods. That it did not exist on the Atlantic coast is rendered probable from the circumstance that all the early writers whom Mr. Colhoun has consulted on the subject, and they are numerous, do not mention them as existing there, but further back. Thomas Morton, one of the first settlers of New England, says, that the Indians "have also made description of great heards of well growne beasts, that live about the parts of this lake," Erocoise, now Lake Ontario, "such as the Christian world, (until this discovery,) hath not bin made acquainted with. These Beasts are of the bignesse of a Cowe, their flesh being very good foode, their hides good lether, their fleeces very useful being a kind of wolle, as fine almost as the wolle of the Bea-

* Purchas his Pilgrimage, London, 1614, p. 778.

ver, and the Salvages do make garments thereof." He adds, "It is tenne yeares since first the relation of these things came to the eares of the English."* We have introduced this quotation, partly with a view to show that the fineness of the buffalo wool, which has caused it within a few years to become an object of commerce, was known as far back as Morton's time. He compares it to that of the beaver, and with some truth; we were shown lower down on Red river, hats that appeared to be of a very good quality. They had been made in London with the wool of the buffalo. An acquaintance on the part of Europeans with the animal itself, can be referred to nearly a century before that; for in 1532, Guzman met with buffalo in the province of Cinaloa.† De Laet says, upon the authority of Gomara, when speaking of the buffalo in Quivira, that they are almost black, and seldom diversified with white spots.‡ In his History, written subsequently to 1684, Hubbard does not enumerate this animal among those of New England. Purchas informs us that in 1613, the adventurers discovered in Virginia, "a slow kinde of cattell as bigge as kine, which were good meate.‖" From Lawson we find that great plenty of buffaloes, elks, &c. existed near Cape Fear river and its tributaries.§ And we know that some of those who first settled the Abbeville district, in South Carolina, in 1756, found the buffalo there. De Soto's party, who traversed East Florida, Georgia, Alabama, Mississippi, Arkansa Territory, and Louisiana, from 1539 to 1543, saw no buffalo; they were told that the animal was

* New English Canaan, by Thomas Morton. Amsterdam, 1637. p. 98.

† De Laet Americæ Utriusque Descriptio. Lugd. Batav. Anno 1633. Lib. 6. Cap. 6.

‡ Idem, Lib. 6. Cap. 17. ‖ Purchas, ut supra, p. 759.

§ Lawson, ut supra, p. 48, 115, &c.

north of them; however they frequently met with buffalo hides, particularly when west of the Mississippi; and Du Pratz, who published in 1758, informs us that at that time the animal did not exist in lower Louisiana. We know, however, of one author, Bernard Romans, who wrote in 1774, and who speaks of the buffalo as a benefit of nature bestowed upon Florida. There can be no doubt that the animal approached the Gulf of Mexico near the Bay of St. Bernard, for Alvar Nunez about the year 1535, saw them not far from the coast, and Joutel, one hundred and fifty years afterwards, saw them at the Bay of St. Bernard. It is probable that this bay is the lowest point of latitude at which this animal has been found east of the Rocky Mountains. There can be no doubt of their existence west of those mountains, though Father Venegas does not include them among the animals of California, and although they were not seen west of the mountains by Lewis and Clarke, nor mentioned by Harmon or Mackenzie as existing in New Caledonia, a country of immense extent, which is included between the Pacific Ocean, the Rocky Mountains, the territory of the United States, and the Russian possessions on the north-west coast of America. Yet its existence at present on the Columbia appears to be well ascertained, and we are told that there is a tradition among the natives, that shortly before the visit of our enterprising explorers, destructive fires had raged over the prairies, and driven the buffalo east of the mountains. Mr. Dougherty, the very able and intelligent sub-agent who accompanied the expedition to the Rocky Mountains, and who communicated so much valuable matter to Mr. Say, asserted that he had seen a few of them in the mountains, but not west of them. It is highly probable that the buffalo ranged on the western side of the Rocky Mountains, to

as low a latitude as on the eastern side. De Laet says, on the authority of Herrera, that they grazed as far south as the banks of the river Yaquimi.* In the same chapter this author states, that Martin Perez had, in 1591, estimated the province of Cinaloa, in which this river runs, to be three hundred leagues from the city of Mexico. This river is supposed to be the same, which, on Mr. Tanner's map of North America, (Philadelphia, 1822,) is named Hiaqui, and situated between the 27th and 28th degrees of north latitude. Perhaps, however, it may be the Rio Gila which empties itself in latitude 32°. Although we may not be able to determine with precision the southern limit of the roamings of the buffalo, west of the mountains, the fact of their existence there in great abundance, is amply settled by the testimony of De Laet on the authority of Gomara, L. 6, C. 17, and of Purchas, p. 778. Its limits to the north are not easier to determine. In Hakluyt's collection we have an extract of a letter from Mr. Anthonie Parkhurst, in 1578, in which he uses these words; in the island of Newfoundland there "are mightie beastes, like to camels in greatnesse, and their feete cloven. I did see them farre off, not able to discerne them perfectly, but their steps shewed that their feete were cloven and bigger than the feete of Camels. I suppose them to be a kind of Buffes which I read to bee in the countreys adjacent and very many in the firme land."† In the same collection, p. 689, we find in the account of Sir Humfrey Gilbert's voyages, which commenced in 1583, that there are said to be in Newfoundland, "buttolfes, or a beast it seemeth by the tract

* "Juxta Yaquimi fluminis ripas, tauri vaccæque et prægrandes cervi pascuntur."—Ut supra, Lib. 6, Cap. 6.

† The principall navigations, voyages, and discoveries of the English nation, &c. by Richard Hakluyt. London, 1589. p. 676.

and foote very large in maner of an oxe." It may, however, be questioned, whether these were not musk oxen, instead of the common buffalo or bison of our prairies. We have no authority of any weight, which warrants us in admitting that the buffalo existed north of Lakes Ontario, Erie, &c. and east of Lake Superior. From what we know of the country between Nelson's river, Hudson's Bay, and the lower lakes, including New South Wales and Upper Canada, we are inclined to believe that the buffalo never abounded there, if indeed any were ever found north of the lakes. But west of Lake Winnepeek we know that they are found as far north as the 62d degree of north latitude. Captain Franklin's party killed one on Salt river, about the 60th degree. Probably they are found all over the prairies, which are bounded on the north by a line commencing at the point at which the 62° meets the base of the Rocky Mountains, and running in a south-easterly direction to the southern extremity of Lake Winnepeek, which is but very little north of the 50th degree. On the Saskatchawan, buffaloes are very abundant. It may be proper to mention here, that the small white buffalo, of which Mackenzie makes frequent mention on the authority of the Indians, who told him that they lived in the mountains, is probably not the bison; for Lewis and Clarke inform us that the Indians designated by that name the mountain sheep.* It is probable that, west of the Rocky Mountains, the buffalo does not extend far north of the Columbia.

At present it is scarcely seen east of the Mississippi, and south of the St. Lawrence. Governor Cass' party found, in 1819, buffaloes on the east side of the Mississippi, above the falls of St. Anthony. Every year this animal's rovings

* Vol. II. p. 325.

are restricted. In 1822, the limit of its wanderings down the St. Peter, was Great Swan Lake, (near Camp Crescent.) In 1823, the gentlemen of the Columbia Fur Company were obliged to travel five days, in a north-west direction from Lake Travers, before they fell in with the game, but they then soon succeeded in killing sixty animals. There can be no doubt but this constant subtraction from his roamings must affect his numbers; certainly more than the practice of killing only the cows and leaving the bulls; a custom which has probably prevailed among the Indians for a long while, and which we cannot therefore consider as the source of the great modern diminution in their numbers. Civilization in its steady march destroys the larger gregarious animals, and even drives back the hunting man, unless he change his mode of life. If the deer were more social in its habits, that interesting tenant of our forests would have been long since driven to the asylum of the buffalo, the elk, and the beaver.

All the buffaloes which our party saw, were of an uniform dun colour. We were informed that they had been sometimes seen white or spotted. The age of the animal is generally indicated by the number of rugæ or transverse lines on the horns. Mr. Colhoun killed a bull, that by this process of reckoning, was supposed to be twenty-six years old; in this calculation the first four rugæ are allowed for the first year. If this mode of calculation be correct, as is generally supposed, the buffalo probably attains a greater age than the tame ox. The frame of the buffalo is much larger than that of domestic cattle, and though its fore parts are uncouth, the hind parts are handsomely formed. Cows are considered more delicate eating than bulls, especially during the rutting season, when the latter assume a rank and strong flavour. This was the case about the

time that our party saw them. We had no opportunity of killing cows, and as the bulls were lean, we ate principally the tongue and liver of those that we killed. These, together with the hump, hump ribs, marrow bones, heart, tender loin, and hunter's roast, (fillet near the shoulder blade,) constitute the choice pieces, and when buffaloes are plenty, are the only parts that are eaten. At Lake Travers, it is estimated that cows generally yield from two hundred and fifty to three hundred pounds of good meat. This is exclusive of the head and other parts. There are eight bones, (viz. those from the four legs and thighs,) which are enumerated as marrow bones. It is difficult to conjecture the quantity of marrow which they afford, either singly or collectively, but the marrow of one bone is frequently sufficient for a meal. To obtain it, the flesh is scraped off from the bones, and they are thrown into the fire; after remaining a few minutes, they are withdrawn, the bones broken, and the marrow, taken out with a sharp stick, is eaten without any accompaniment. It is a very rich, delicate food, resembling in colour and consistence a custard. It is by some persons preferred raw, but did not appear to us in that state to be so palatable.

In pursuing a herd of buffalo, particularly if it consist of bulls, a strong odour of musk is emitted, which imparts the scent very distinctly to the prairie, and their feet make the grass crackle as if on fire. We mentioned that the buffalo bulls frequently approached very near to our line, which, by some of our fellow travellers, was attributed to the imperfect vision of the animal, whose eyes are obscured by the great quantity of hair which covers its face; this is probably, however, incorrect; it either arises from the greater fearlessness of the bulls during the rutting season, or perhaps from the circumstance that though they

distinguish men very well, they are not aware of their nature by sight alone. It is the odour of man which is principally required to drive them off. We have seen bulls approach to windward of our line with the greatest composure, pass near us, but the moment they fell to leeward, the smell would set them galloping with the greatest speed. The quickness of their olfactory nerves is well known; sometimes when the wind is strong, they will be made aware of the presence of men, at two or more miles to windward of them. Buffaloes and elks are seen on the same prairies, and do not appear to be affected by each other's presence, they do not however herd together; each associates only with the animals of its own kind. We saw on the prairies with the buffalo, besides the elk, only the common prairie wolf, which appears to be the common attendant on the buffalo. Among the birds which we remarked were the bald eagle, (Falco leucocephalus,) and the hooping crane. The buffalo is often seen wallowing and throwing up the dust, which at a great distance resembles the spouting of a whale.

The difficulty of killing this animal is very great, and may be judged of by the fact that Mr. Peale fired fourteen balls into the chest of a buffalo before he killed him, and Mr. Scott, with a view to ascertain whether a ball fired at the head would break the frontal bone, discharged his rifle at a dead bull within ten paces; the ball did not penetrate, but merely entangled itself in the hair where it was found. It had, however, struck the forehead, and left a mark before it rebounded. This agreed with the general impression which Mr. Scott had formed on the subject, having been stationed more or less for the last ten years in a buffalo country, and having had frequent opportunities of firing at them in every direction. His skill and address

in shooting, are proverbial on the Mississippi and Missouri. We had many occasions of witnessing them ourselves, though the great scarcity of game of any kind observed during the whole of the expedition, except on the prairies at the head of Red river, limited his opportunities of displaying his rare talent.

When we consider the great force, size, agility, and speed of the buffalo, we must regret that no successful experiment has as yet been made to domesticate this noble animal, and appropriate it to the wants of man. Instead of endeavouring to turn to use the many valuable animals which formerly roved over our country, the settlers seem to have been satisfied with importing those from Europe. There can, we think, be but little doubt that the buffalo might, by proper management, be domesticated, and made to replace with great advantage the European Ox. We have seen it, in one instance, used with apparent facility. Another experiment, which would certainly be very interesting, would be to ascertain whether the breeds might not be crossed, and what would be the result. We have, it is true, heard it asserted, and the impression appears to be general in that country, that a domestic bull had in certain cases impregnated a buffalo cow, and that the produce had partaken of the characters of both parents; but that a favourable issue could not be expected in the case of impregnation of the domestic cow, by the buffalo bull, because the pelvis of the former being too small for the issue of the calf, both the cow and her progeny would die before parturition. Mr. Say has endeavoured, but in vain, to trace the report to its source; having always found those who related it to speak on conjecture, he is inclined to doubt whether the experiment has ever been tried; indeed we were told, on Lake Winnepeek, where we saw a pair

of buffaloes that were kept with domestic cattle, that during the rutting season the buffalo bull would not suffer the common cow to approach him. Perhaps, however, this natural antipathy might be made to wear away. The experiment is certainly worth trying.

While in the vicinity of the buffalo we were entirely free from the torment of mosquitoes, from what reason we know not; we can scarcely believe that the animal attracts them all to itself. It is probable that as we were at some distance we should have had a few of them were there not some other cause for their disappearance which we have not been able to discover; we at first attributed their absence to the cold nights which we experienced, but after leaving the buffalo we encountered still colder nights, and although all the other circumstances seemed the same, yet the insect reappeared.

On the 31st, the party continued its route, without any observation except for latitude, which was found at meridian to be 47° 26′ 41″ north. In the morning a female elk was killed by one of the Frenchmen that accompanied us. Our marches had, since we met with the Indians, been commenced at an early hour in the morning, but a very dense fog which covered the prairies until past sunrise detained us late on that day. Our apprehensions of being followed were, however, completely quieted on observing a large column of smoke behind us, which proved that the Indians had fired the prairies. The beds of two small streams, Plum and Sand-hill rivers, were crossed this day. In the former there was no water, and we were obliged to satisfy our thirst with the stagnant fluid found in a pool, the quality of which was not much improved by its having been resorted to by buffaloes. Having travelled eight miles on the morning of the first of August, and be-

ing within a short distance of the Grand or Red Fork of Red river, Mr. Colhoun took an observation for longitude on the banks of that river. The result was that we were in longitude 96° 53′ 45″ west, and our latitude a few miles beyond this, at the fording of the Red Fork, was 47° 47′25″. This branch was forty yards wide where we forded it; from the steepness of the banks we experienced some difficulty in getting our carts over. Its bed is sandy, and its current very rapid. On the 2d of August we suffered much from cold. The thermometer, which had stood at 83° the preceding day at noon in the shade, had sunk to 43° at sunrise. This variation was greater than any we had as yet observed, but for a number of days previous, the variation from sunrise to noon averaged 30°. The transition from great heat during the day to very cold nights was extremely unpleasant; it produced very copious dews, much heavier than any we had ever experienced. We were upon prairies, unsheltered by any tree, and from our mode of travelling very much exposed; frequently our clothes were as wet as if they had been soaked in water; this was one of the circumstances that made the mounting guard at night so arduous a duty both to the soldiers and gentlemen.

We had an opportunity of observing while travelling upon these prairies the long twilight nights which characterize high latitudes. We had scarcely more than five hours of night, and as the moon was at that time pretty full, we seldom experienced any darkness during the whole of our journey to Pembina.

There were numerous ponds of stagnant water upon these prairies, in one of which a beaver was seen, but at too great a distance to be shot at; in the vicinity Mr. Scott killed a line-tailed squirrel* which Mr. Say prepared; it

* Sciurus grammurus, (Say,) Account of an Expedition to the Rocky Mountains, vol. 2. p. 72.

appears therefore that this little animal inhabits prairies as well as woods. While pursuing pigeons, Mr. Scott shot a Falco Columbarius. The country was extremely dry, there were no streams of running water. The prairies were covered in a number of places with saline efflorescences, but no salt springs were observed. On the 2d of August the latitude of our noon encampment was 48° 2′ 39″, and on the 4th, it was 48° 39′ 45″.

On the 5th, we travelled fifteen miles before breakfast, and reached Red river, which we crossed in a barge, opposite to the settlement called Pembina, where we remained four days.

This completed a journey of two hundred and fifty-six miles, performed in eleven days, averaging therefore about twenty three miles per day. Had it not been for our meeting with the buffalo, and with the party of Indians, we should scarcely have experienced on that part of our journey any thing to which we could look back with interest. The dull monotony of a journey upon prairie land never appeared to us so fatiguing. No trees were to be seen except those that fringed the water courses, these consisted principally of several varieties of oak, of the white, and some red elm, linden, gray ash, red-maple, cotton-wood, aspen, hackberry, ironwood, hop hornbeam, and white and red pine. On Red Lake we were told that the trees consist of fir, sugar-maple, and birch. The country is very flat, and remarkably deficient in water. There are no valleys, and but few brooks, streams, or even springs.

The streams that enter Red river from its source to the 49th degree of north latitude are, on its right bank, Buffalo, Wild-rice, Plum, Sand-hill, Red Fork, Swamp, and the "Two rivers;" on its left bank, Pse, Shienne, Elm, Goose, Turtle, Saline, Park, and Pembina. Of these it may be observed, that some confusion exists as to the names of the

streams, from the circumstance that different appellations are applied to them, by the Dacotas, the Chippewas, and the traders. A concordance between these different synonimies is difficult to establish; thus the term Pse, applied by the Sioux to one of the western tributaries, has the same meaning as the word Menomone, used by the Chippewa to designate one of the rivers that fall in on the east bank, and both are by the traders called Wild-rice, or Folle Avoine. We have used those names that were least likely to create a confusion, and as that of Menomone was preoccupied, we have kept the name of Pse for the western, and Wild-rice for the eastern tributary. However bad the names may be, we have preferred retaining them than increasing the confusion by substituting new terms. It is to be regretted that the practice of retaining the Indian appellations has not been more generally adopted by travellers; they have rejected the melodious and original names, to substitute others less pleasant to the ear, and worn out by frequent use, not only on this, but also on the other side of the Atlantic.

Buffalo river rises in a chain of small lakes, surrounded by a large forest, (Bois Grand,) which is said to extend to the Mississippi. Its course from its source is about northwest, its length sixty miles, its breadth where we crossed it eight yards; its bottom muddy.

Wild-rice river is about one hundred and twenty miles long; its name is derived from the abundance of wild rice which grows in a circular lake, about eighteen miles diameter, in which it takes its rise. It is said that the supply of grain which this lake yields is inexhaustible. The course of the river is about parallel to that of Buffalo river; its breadth, nine miles above its mouth, was twelve yards.

The bed of Plum rivulet was five yards wide, that of Sand-hill ten, but both were dry.

The Red Fork, which, by the Indians, is considered as the main branch, takes its name from the Red Lake, in which it rises. Both are said to be translations of the term *bloody*, used by the Indians, and which is doubtless derived from some slaughter committed in that vicinity; not, as is the case with many other rivers which have the same appellation, from the colour of their bed.

In times of flood the Red Fork is navigable for barges throughout its length to Red Lake, a distance of one hundred and twenty miles; in ordinary stages of water, canoes can ascend it to its source. This is the most important tributary of Red river, containing probably an equal quantity of water with the main stream itself. Mr. Jeffries informed us that Red Lake had the form of a crescent, with its back to the south-west, that its dimensions were sixty miles by twenty-four. Carver says, p. 72, that "Red Lake is a comparatively small lake, at the head of a branch of the Bourbon river, which is called by some Red river. Its form is nearly round, and about sixty miles in circumference." Carver had not visited the lake. The general course of the Red fork from this lake is north-west; it receives a few small tributaries, the most important of which are Clear river, entering about thirty miles from its mouth on the south-west side, and Thief river, entering it from the north-east. The woods along Red Fork are very thick, and extend to about half a mile on either side. Hazlenuts were very abundant, and nearly ripe at that time. Below the junction of Red Fork with the main stream, Red river was observed to be about forty yards wide, and its current was about one knot per hour. The bed of Swamp river was dry. At the place where we crossed the "Two rivers,"

each was about ten yards wide; they unite two miles below, and fall into Red river about ten miles beyond their junction. At the confluence of the two branches there is a considerable salt spring.

As we travelled on the east bank of Red river, we saw none of the tributaries that come in from the west, but Mr. Jeffries, who is well acquainted with the country, has described them to us as follows:—

The Pse river rises near the Coteau des Prairies, at the distance of about forty miles from Lake Travers.

The Shienne or Shâhiâdâ, (river of the Shiên, a nation driven by the Sioux to the Upper Missouri,) is a considerable stream, being as wide as Red river itself, above their junction; it has a fine clear water. Its general course is north-east.

Turtle river is formed by the junction of two branches, about forty miles above its mouth; it is of the size of Wild-rice river; it takes its source in Devil Lake; its course is north of west.

Big Salt river is a considerable stream, which rises in a lake of the same name, which is about a mile and a half in circumference.

Park river is of the same size as Big Salt river, and is formed by the union of several insignificant streams.

About one mile above the village of Pembina, the river of the same name falls into Red river; this is probably, next to the Red Fork, the largest tributary south of the 49th degree; about three miles above its mouth it receives the Tongue river, which is a large brook.

There are doubtless in this country a great many salt springs, especially below the Red Fork; we saw none, but we were informed that fine springs exist on Big and Little Saline rivers, on the "Two rivers," &c. where the salt

is found in white efflorescences, so as to be annually collected there by the colonists of Pembina; notwithstanding which, at that settlement, the price of this article is from four to six dollars per barrel, weighing eighty lbs. One of the residents on this river cleared five hundred dollars in one winter by the salt which he collected. Probably by boring to a small depth abundant springs would be obtained. We had no opportunity of ascertaining the geological features of the country, having seen on the whole route no rock in place, and but few rolled stones, none of which had attained to any size. The soil of the prairies is occasionally sandy, though this does not appear to be its prevalent character; it is rather a dry argillaceous ground, which, within a few miles of the river and its tributaries, yields good grass, but at a distance from it presents but a scanty growth. We do not profess to be judges of prairie land; but we observed that where trees do grow, the soil appears extremely fertile. It is probable, that the fires, which annually overrun these prairies, destroy all the vegetable matter, and tend to keep the ground in an impoverished state. We observed a very great difference in the soil of those parts of the prairie from which the grass had not been burnt off the preceding year.

The causes of these conflagrations are numerous. The Indian frequently sets the prairies on fire in order to distract the pursuit of his enemies by the smoke, or to destroy all trace of his passage; to keep the country open, and thus invite the buffalo to it; to be able to see and chace his game with more facility; as a means of communicating intelligence to a distance with a view to give notice to his friends of his approach, or to warn them of the presence of an enemy. The traders often burn the prairies with the same view. Independent of these, the fires of encamp-

ments frequently spread in dry weather, and burn away the grass to a great distance. We may therefore consider fire as the cause of the continuance, if not of the original existence, of prairies, at least over much of our country; but there are some parts, and in this class we would be induced to include the country on Red river, where the great drought, the want of streams to moisten the soil, and perhaps some other causes, unite in preventing the growth of trees.

The settlement of Pembina is situated on Red river, about one hundred and seventy miles above its mouth. The river is here only fifty yards wide, but its depth is very considerable; in the middle of the stream not less than from ten to twenty feet; it is deeply incased, which prevents the water from overflowing the country, though its swells are considerable. An old trader, who has resided there for upwards of forty years, informed us, that he had once witnessed a flood which covered the banks; the water having risen sixty-six feet. The usual rises are from fifteen to twenty feet.

The principal inhabitant of the place, Mr. Nolen, being apprized of our arrival, furnished us the means of crossing the river, and entertained us several times at his house during our stay in his vicinity. We are indebted to him for much polite attention.

Pembina constituted the upper settlement made on the tract of land granted to the late Lord Selkirk by the Hudson's Bay Company. It may be well to observe, that by virtue of a charter from Charles the Second, granted in 1670, to Prince Rupert and others, constituting the "honourable Hudson's Bay Company," the whole of the British dominions lying contiguous to Hudson's Bay or its tributaries, has been claimed by that company, not only as regards the monopoly of the fur trade, but also as respects

the right to the soil, and to the jurisdiction of the country. About the year 1812, Lord Selkirk, who was one of the principal partners, obtained from the company a grant of a considerable tract of land, including both banks of Red river up to the Red or Grand Fork. To this he extinguished the Indian title by the payment of a certain amount, and the promise of an annuity to the Indians. He then opened the lands for settlement, inviting a number of British subjects to go and reside upon them, and with a view to strengthen his infant colony, he engaged recruits from Switzerland and other countries, and especially increased it by a number of soldiers belonging to the de Meuron and de Watteville regiments, two foreign corps that were in the pay of England during the late war, and that were disbanded in Canada in the year 1815. Two principal settlements were formed, one at Fort Douglas, which is at the confluence of the Assiniboin and Red rivers, and the other one hundred and twenty miles by water above that, and near the mouth of a small stream, named by the Chippewas Anepeminan sipi, so called from a small red berry termed by them anepeminan, which name has been shortened and corrupted into Pembina,* (Viburnum oxycoccos.)

The Hudson's Bay Company had a fort here, until the spring of 1823, when observations, made by their own astronomers, led them to suspect that it was south of the boundary line, and they therefore abandoned it, removing all that could be sent down the river with advantage. The Catholic clergyman, who had been supported at this place, was at the same time removed to Fort Douglas, and a large and neat chapel built by the settlers for their accommoda-

* The *b* has been introduced by Europeans; the theme of the word is Nepin, summer, and Minan, berry.

tion is now fast going to decay. The settlement consists of about three hundred and fifty souls, residing in sixty log houses or cabins; they do not appear to possess the qualifications for good settlers; few of them are farmers; most of them are half-breeds, who having been educated by their Indian mothers, have imbibed the roving, unsettled, and indolent habits of Indians. Accustomed from their early infancy to the arts of the fur trade, which may be considered as one of the worst schools for morals, they have acquired no small share of cunning and artifice. These form at least two-thirds of the male inhabitants. The rest consist of Swiss and Scotch settlers, most of the former are old soldiers, as unfit for agricultural pursuits as the half-breeds themselves. The only good colonists are the Scotch, who have brought over with them, as usual, their steady habits, and their indefatigable perseverance. Although the soil about Pembina is very good, and will, when well cultivated, yield a plentiful return, yet, from the character of the population, as well as from the infant state of the colony, it does not at present yield sufficient produce to support the settlers, who therefore devote much of their time to hunting; this, which perhaps in the origin was the effect of an imperfect state of agriculture, soon acted as a cause; for experience shows, that men addicted to hunting never can make good farmers. At the time when we arrived at the colony, most of the settlers had gone from home, taking with them their families, horses, &c. They were then chasing the buffalo in the prairies, and had been absent forty-five days without being heard from. The settlement was in the greatest need of provisions; fortunately for us, who were likewise destitute, they arrived the next day. Their return afforded us a view of what was really a novel and interesting specta-

cle; their march was a triumphant one, and presented a much greater concourse of men, women and children than we had expected to meet on those distant prairies. The procession consisted of one hundred and fifteen carts, each loaded with about eight hundred pounds of the finest buffalo meat; there were three hundred persons, including the women. The number of their horses, some of which were very good, was not under two hundred. Twenty hunters, mounted on their best steeds, rode in abreast; having heard of our arrival, they fired a salute as they passed our camp. These men receive here the name of *Gens libres* or Freemen, to distinguish them from the servants of the Hudson's Bay Company, who are called *Engagés*. Those that are partly of Indian extraction, are nick-named *Bois brulé*, (Burnt wood,) from their dark complexion.

A swift horse is held by them to be the most valuable property; they are good judges of horses, particularly of racers, with which they may chace the buffalo. Their horses are procured from our southern prairies, or from the internal provinces of New Spain, whence they are stolen by the Indians, and traded or re-stolen throughout the whole distance, until they get into the possession of these men. Their dress is singular, but not deficient in beauty; it is a mixture of the European and Indian habits. All of them have a blue capote with a hood, which they use only in bad weather; the capote is secured round their waist by a military sash; they wear a shirt of calico or painted muslin, moccassins and leather leggings fastened round the leg by garters ornamented with beads, &c. The Bois brulés often dispense with a hat; when they have one, it is generally variegated in the Indian manner, with feathers, gilt lace, and other tawdry ornaments.

The character of the Bois brulé countenance is peculiar. Their eyes are small, black, and piercing; their hair generally long, not unfrequently curled, and of the deepest black; their nose is short and turned up; their mouth wide; their teeth good; their complexion of a deep olive, which varies according to the quantity of Indian blood which they have in them. They are smart, active, excellent runners. One of them, we were told, often chased the buffalo on foot; we did not, however, see him do it. This man had a handsome, well-proportioned figure, of which Mr. Seymour took a sketch. He was very strong, and was known to have three times discharged, from his bow, an arrow, which, after perforating one buffalo, had killed a second; an achievement which is sometimes performed by Indians, though it is rare, as it requires great muscular strength. Their countenance is full of expression, which partakes of cunning and malice. When angry, it assumes all the force of the Indian features, and denotes perhaps more of the demoniac spirit than is generally met with, even in the countenance of the aborigines.

The great mixture of nations, which consist of English, Scotch, French, Italians, Germans, Swiss, united with Indians of different tribes, viz. Chippewas, Crees, Dacotas, &c. has been unfavourable to the state of their morals; for, as is generally the case, they have been more prone to imitate the vices than the virtues of each stock; we can therefore ascribe to this combination of heterogeneous ingredients, but a very low rank in the scale of civilization. They are but little superior to the Indians themselves. Their cabins are built, however, with a little more art; they cultivate small fields of wheat, maize, barley, potatoes, turnips, tobacco, &c. A few of the more respectable inhabitants keep cows and attend to agriculture, but we saw neither

a plough nor a yoke of oxen in use, in the whole of the upper settlement. Considering the high latitude of Pembina, the above-mentioned plants thrive well. Maize yields tolerable crops; so does tobacco, which even yields seed. The wheat which is in greatest repute here is the bearded wheat. The price of agricultural produce is apparently very high. Wheat sells for $2.00 per bushel; Indian corn for $3.00; barley, which is much used by the colonists in soup, yields $3.00; potatoes from 50 cents to $1.00; and the other vegetables in proportion. It may be well, however, to add that these are mere nominal prices, there is no specie currency, every thing is traded for in the way of exchange for some other commodity, at the rates affixed to them by the Hudson's Bay Company, of which the following may give an idea. Gun powder at $1.25 per lb. Buck and small shot at 75 cents per lb. Tobacco $2.00 per lb.

The main object of the party in visiting this place being the determination of the 49th degree of latitude, Mr. Colhoun lost no time in taking observations. The first one which he made was near Mr. Nolen's house, and although not very satisfactory, yet it showed that we were near to the boundary line, as it indicated 48° 59′ 27″. We then pitched our camp a little further down on the bank of the river, and as near as we could judge to the boundary line. A large skin lodge, which was lent to us, sheltered the gentlemen of the party during our stay there; our flies were pitched around it for the use of the soldiers. In honour of the President of the United States, this place received the name of Camp Monroe. A flag-staff was planted, which, after a series of observations, made during four days, was determined to be in latitude 48° 59′ 57⅓″ north. The magnetic variation having been ascertained to be 13° 17′ 25″ east, the distance to the boundary line was measured off, and

an oak post fixed on it, bearing on the north side the letters G. B. and on the south side those U. S. On the 8th of August, at noon, the flag was hoisted on the staff, which bore south 44° 25′ west of the post, at a distance of 207½ feet. A national salute was fired at the time, and a proclamation made by Major Long, that "by virtue of the authority vested in him by the President of the United States, the country situated upon Red river, above that point, was declared to be comprehended within the territory of the United States." This declaration was made in the presence of all the inhabitants collected for that purpose. They appeared well satisfied on hearing that the whole of the settlement of Pembina, with the exception of a single log-house, standing near the left bank of the river, would be included in the territory of the United States. While fixing the posts, the colonists requested that they might be shown how the line would run; when this was done, the first observation they made was, that all the buffalo would be on our side of the line; this remark shows the great interest they take in this animal, to which all their thoughts recur. We might almost apply to them the observation made by Gomara of the natives of the province of Quivira, and which is strictly true of the Dacotas. "The people have no other riches, (than the buffalo;) they are unto them meat, drink, apparel; their hides also yield them houses and ropes; their sinews and hair, thread; their horns, mawes, and bladders, vessels; their dung, fire; the calves skins budgets wherewith they draw and keep water."*

"Præter hæc animalia, nullas præterea divitias noverunt barbari; hæc ipsis cibum potumque subministrant, (cáro autem optimi est saporis,) tergoribus illorum corpora sua pariter atque casulas muniunt; e laciniis eorum funes contorquent; ossa illis stilos; nervi villique funes; cornua buccinas; vesicæ utres; fimus denique siccus fomites præbet." Vide De Lact, ut supra, L. 6, C. 17, and Purchas, p. 778.

The spot upon which we were encamped was a fine level prairie on the edge of the woods that skirt the river; two or three lodges were built in our vicinity; these Mr. Seymour sketched, and they are represented in plate 8, which shows the two different kinds of lodges used by the north-west Indians; those who reside on the prairies, and who hunt the buffalo, use the skin lodge, which is formed by a number of buffalo skins, united into one, and wound round a number of light sticks or poles, so as to form a conical tent. Of this nature are all the lodges used by the Dacotas. On the other hand the Chippewas, who for the most part live to the north-east of the buffalo regions, and who have no more of these skins than they require for their personal use, construct their lodges of large pieces of the birch-bark, which they fix upon a frame, made of the young branches of trees, bent so as to form an oblong lodge. These are covered with bark, which, when they travel, is rolled up and carried by the women. The plate gives a good idea of the dress, appearance, and attitudes of the Indians and half-breeds that surrounded us. It likewise exhibits two dogs, carrying burdens in the manner of pack-horses. We have ascertained that a good dog will sell here for twenty dollars, (payable in goods.) This animal generally consumes from six to ten pounds of fresh meat, or four pounds of dry meat per day; it is never fed but at night, otherwise it is indolent all day. We were not a little amused at examining the house of a man that takes dogs to board and lodge for the summer, receiving about three dollars a head for the season. He returns them in the autumn to their masters, who use them during the winter season. He feeds them in summer altogether upon fish, chiefly the *hyodon*. In a short time he catches enough to support during the day thirty or forty dogs, which he now has under his care; sometimes the number of his boarders

Design'd by S. Seymour. Pub. by H. C. Carey & I. Lea 1824. Engrav'd by J. Hill.

is far greater. It is said that hydrophobia never occurs among dogs in these climates.

Although the weather was not as favourable as might have been wished for the astronomical observations, yet the point at which the boundary line passes is probably determined with as much accuracy as the nature of our instruments permitted; and we are happy to state, that it coincides very well with approximate observations taken by Mr. Fidler, who was employed as surveyor to the Hudson's Bay Company.

The fur trade of Pembina, which results from animals killed on the south side of the boundary line, has been estimated as follows:—

	Packs.	No. of skins in each pack.	Price per pack.	Amount.
Beaver,	4	400	400	$1600
Martin,	½	or 300		300
Otter, a few skins				
Fisher,	200 skins			300
Bear, (finest,)	150			900
Elk, (dressed,)	300			1200
Minx,	200			100
Muskrat,	4500			1800
Wolverine,	250			500
Fox,	200			400
				$7100

This constitutes the amount of furs annually made up for the use of the company, and which is probably rated at the nominal value of the country. They might in addition to these collect a large quantity of buffalo, grizzly bear, wolf, hare, rabbit, swan, and prairie wolf. But the company

having found but little advantage in trading in these furs, they are not sought after. By comparing this amount with that yielded by the fur trade on the St. Peter alone, we will be able to judge of the small importance to be attached to the trade of Pembina. Twelve trading houses on the St. Peter made up the year before we visited the country about two hundred and thirty-six packs, which consisted of—

	No. of packs.	Weight and No. of skins in each.
Buffalo,	168	10
Muskrat,	40	600
Raccoon,	6	100 lbs. 80
Beaver,	4	100 lbs. 80
Otter,	4	100 lbs. 60 (prime.)
Fisher,	3	100 lbs. 120
Minx,	4	100 lbs. 450
Bear,	6	100 lbs. 14
Red Fox	1	100 lbs. 120

Martins, very few; they inhabit in preference evergreen woods.

Ermine abundant, but not traded.

Lynx, less than one pack.

Antelope, none.

Thus the trade of the St. Peter, reduced as it is at present, is still far more important than that of Pembina. But whatever this trade may be, it will diminish as the population increases; hence it is only to the agricultural resources of this settlement that we must look with a view to the future improvement of the country. And no doubt can exist that, in this respect, Pembina will equal, if not surpass, all other settlements on Red river. The most important question, however, which suggests itself to us is, not what can be raised, but what market can be obtained for the produce of the country; and here

it must be acknowledged, that there are but few facilities for a foreign market. The communication with Hudson's Bay is too long and too difficult to offer any well grounded hope of its being ever resorted to for an export trade. That with Lake Superior may be carried on by two routes, either by Lakes Winnepeek, and of the Woods, or by Red Lake; but both of these present great difficulties; the easiest navigation to the sea is undoubtedly up Red river to Otter-tail Lake, and thence by the Riviere de Corbeau and the Mississippi to New Orleans. We do not consider the route by Lake Travers and the St. Peter as offering any prospect of being ever adopted. The only foreign market which appears to us therefore as open to Pembina, is that obtained through the port of New Orleans; but the distance of upwards of three thousand miles must for ever render this route an unprofitable one; the intermediate country, far from presenting any hopes of a market, will likewise have a surplus agricultural product to send down to the mouth of the Mississippi, where it will arrive less encumbered with expenses of transportation. The produce raised at Pembina never can be sufficiently valuable to compensate these disadvantages; and we very much question, whether the country be adapted to the raising of hemp, as was anticipated by the founder of the colony; to the west and north-west we see no prospect of a market. It has been said, that the support of the persons engaged in the fur trade would be an object for the agriculturist; but if it be borne in mind, that in the days of the greatest prosperity of the British fur trade, and at a time when the two rival companies had a much larger number of Engagés than they probably will ever have in future, the aggregate of the servants of both companies did not exceed five thousand men; we

will remain convinced that the supply of so small a population offers no brilliant prospects to the colony. Whatever may be the amount of the population of Pembina at a future period, it will, we think, have to depend much upon the internal resources of the country; it can look to no foreign trade. Great hopes appear to have been entertained, by some of the colonists, of the discovery of valuable mines; and they have already had among them some who have announced the existence of silver ore, and have even asserted that they had obtained the metal out of it. We saw no ore of this kind; the prairies do not present any character that would lead us to anticipate the discovery of mines in their neighbourhood. There is a mountain on Pembina river, about thirty leagues from the settlement, in which these mines are supposed to exist; we saw a specimen from it, but it was the common iron pyrites. Coal has been represented as being found there; whether there be any foundation for the report we know not.

Of the plants observed in this neighbourhood, besides the Pembina, we can only mention the common hop; and the raspberry-bush, which yields fruit in great abundance and of a very superior quality; also a large kind of whortleberry, the fruit of which is double the size of ours, and more oval. The forest-trees are the same which we had previously seen on Red river. The zoology of the country is not very diversified. Among the birds seen by Mr. Say, during our stay at Pembina, were the turkey-buzzard,* red-headed woodpecker, flicker, hemp-bird,† king-bird,‡ sparrow-hawk,§ house-wren, robin,‖ chimney-bird,¶

* Cathartes aura.
† Fringilla tristis.
‡ Tyrannus pipiri, Vieil.
§ Tinnunculus sparverius.
‖ Turdus migratorius,
¶ Hirundo pelasgia.

barn swallow,* night-hawk,† whip-poor-will,‡ bald-eagle, hairy woodpecker, great heron,§ grakle,‖ kildeer,¶ blue-winged teal, ruddy duck,** rose-breasted grosbeak,†† crow, raven, and pigeon,‡‡ the last of which is very abundant in the woods.

Among the quadrupeds were the pouched rat,§§ flying squirrel,‖‖ Hudson's Bay squirrel.¶¶ Wolves are very numerous and bold. Some came up to our lodge during the night, and bit very severely one of our horses that was staked near it.

We may conclude this imperfect statement of the present situation and future prospects of this colony, with a tabular view of the distance from Pembina to some of the most important places; premising, however, that estimates made upon such immense extents of territory, and in countries as yet very little explored, must of course be liable to errors; it is only upon loose calculations that these estimates are founded.

1. *Distance from Pembina to York Factory, on Hudson's Bay.*

	Miles.
From Pembina to the mouth of Red river - -	163
Along the east side of Lake Winnepeek - -	300
Play Green Lake - - - - - - -	14
Carried over - - - - - - - - -	477

* Hirundo Americana.
† Caprimulgus popetue, Vieil.
‡ Caprimulgus Virginianus.
§ Ardea Herodias.
‖ Icterus quiscala.
¶ Charadrius vociferus.
** Anas rubidus, Wilson.
†† Loxia Ludoviciana.
‡‡ Columba migratoria.
§§ Pseudostoma bursaria, (Say.) See Account of an Expedition to the Rocky Mountains, vol. 1, p. 406.
‖‖ Pteromys volucella.
¶¶ Sciurus Hudsonius.

	Miles.
Brought over - - - - - - - -	477
Saskatchewina river and Portage - - - -	35
Hare Lake - - - - - - - - -	7
Each-away-man's brook, in dry seasons no water; ten beaver dams kept in repair - - - -	28
Rivulets and small lakes, 5 portages - - -	50
Holy Lake - - - - - - - - -	30
Trout river, many rapids, 2 portages - - -	13
Knee lake - - - - - - - - -	47
Jack-tent river, many rapids, 5 portages - -	10
Swampy Lake - - - - - - - -	7
Hill river, series of shoals, strong rapids, innumerable sunken rocks, 12 portages, and many discharges	62
Main river, comes from South or Nipegon, Steel river, must be towed up, - - - - -	27
Hayes river - - - - - - - -	52
	845

The above admeasurements were made by David Thompson, Esq. one of the best geographers in the British Dominions of North America, and at present employed on the boundary line commission. They are extracted from "A Narrative of Occurrences in the Indian Countries of North America, London and Montreal, 1818."

2. *Distance from Pembina by the St. Peter to New Orleans.*

	Miles.
From Pembina to the mouth of the Grand Fork of Red river - - - - - - - -	130
Thence to the mouth of the River des Sioux - -	180
Carried over - - - - - - - -	310

	Miles.
Brought over	310
Length of the River des Sioux	35
Length of Lake Travers	15
Portage to the St. Peter	1
Length of the St. Peter	500
From the mouth of the St. Peter to New Orleans upwards of	2000
	2861

3. *Distance from Pembina to New Orleans, by Otter-tail Lake and the Riviere de Corbeau.*

	Miles.
From Pembina to the mouth of Sioux river	310
To the head of Otter-tail river	75
Two small lakes and portages	4
Thence to the Mississippi by Leaf and de Corbeau rivers, a distance, as stated by Pike, (App. Part I. p. 53,) of	360
Distance to the Falls of St. Anthony	300
Thence to New Orleans, say	2000
	3049

The distance from the Mississippi to Otter-tail Lake, by this route, appears to us very much overrated.

4. *Distance from Pembina to Buffalo by Lakes Winnepeek and of the Woods.*

	Miles.
From Pembina down Red river to Lake Winnepeek	165
Across the lake to the mouth of Winnepeek river	65
Up Winnepeek river to the Lake of the Woods	175
	405

	Miles.
Brought forward	405
Across the Lake of the Woods	75
To Fort William on Lake Superior	453
Along the northern coast of the lake to the Sault de Ste. Marie	316
To Mackinaw	84
To Detroit	300
To Buffalo	270
	1903

On this route there are seventy-two portages.

5. *Distance from Pembina to Buffalo by Red Lake.*

	Miles.
To the mouth of Grand Fork	130
Up Grand Fork to Red Lake Portage	200
Thence by a series of lakes and portages to Cassina Lake	70
Through Cassina Lake	7
To Sandy Lake	271
Through Sandy Lake	3
Up West Savannah river	18
Savannah Portage	6
Down East Savannah river	24
Down river St. Louis to Fond du Lac	75
Along the southern coast of Lake Superior to Sault de Ste. Marie	505
Thence to Buffalo	654
	1963

The distances from Cassina Lake to the Sault de Ste.

Marie by this route, are those given by Mr. Schoolcraft in his Narrative Journal of Travels, &c. ut supra, p. 169, 204, 236, and 253. We might add several other routes; but the data which we have are not sufficient for us to establish even estimates of the distances. The shortest route from Lake Superior to tide water is not through the St. Lawrence, but through Michipicotton Bay, Brunswick and Moose rivers, &c. to Moose Factory on James' Bay; loaded canoes pass through in sixteen days; the distance cannot exceed eight hundred and fifty miles. It will soon be used by the Hudson's Bay Company to the exclusion of that at present travelled between Fort William and York Factory.

Several of the routes which we have enumerated can be travelled at much shorter distances by wheels in summer, or by sledges in winter. The object which we have had in view is not to give exact distances, which, in the present state of the country, is as unnecessary, as it would prove impossible, but to show that direct water communications exist by various routes between the waters of the Gulf of Mexico, the Gulf of St. Lawrence, and Hudson's Bay; and that in this respect, North America presents perhaps an unparalleled instance of direct water communications for thousands of miles. Some of these routes are, it is true, very much obstructed by rapids and falls, which occasion portages and lightening places. Still there can be no doubt that, at a future period, new routes will be discovered, or the old ones will be so much improved as to admit of a comparatively easy communication with the elevated plains which furnish the sources of Nelson's river, the St. Lawrence, and the Mississippi.

CHAPTER II.

Fort Douglas, and Lord Selkirk's colony. Bark canoes. Lake Winnepeek. Fort Alexander. River Winnepeek. Rapids. Portages. Fine falls. Lake of the Woods. North-westernmost point of the boundary line. Rainy Lake river and lake. Fort. Series of rapids and lakes. Dividing ridge. Falls of Kamanetekwoya. Arrival at Fort William.

WITH a view to comply with his instructions, Major Long proposed to travel along the northern boundary of the United States to Lake Superior; but he was informed at Pembina that such an undertaking would be impracticable; the whole of the country from Red Lake to Lake Winnepeek, Lake of the Woods, and Lake Superior, being covered with small lagoons and marshes, which rendered it impenetrable for horses. The only practicable mode was to follow the principal streams in bark canoes, which being very light could be carried whenever the navigation was obstructed by shoals, rapids, &c. Several routes were suggested; that by Lake Winnepeek appeared the best, and was adopted. It is the same which was formerly travelled by the partners and clerks of the North-west Company, and which is still occasionally used by the Hudson's Bay Company. Our horses becoming useless, we had to dispose of them, and in this transaction we were more fortunate than we could have expected. Horses from the United States are in great repute, and notwithstanding the hardships which ours had undergone they were sold, with-

out much difficulty, at a rate which varied from forty to one hundred dollars, averaging about sixty-six dollars. This was, however, payable in services, stores, and such goods as we required. Our mode of travelling in bark canoes obliged us to obtain an additional supply of men accustomed to this kind of navigation. Of these we hired several at Pembina; and it being thought that the rest of them, as well as the canoes, &c. could be had on more advantageous terms at Fort Douglas, Major Long proceeded by land to that place, while the other gentlemen availed themselves of Mr. Nolen's polite offer to take a passage in a barge which he was sending down the river with a load of provisions.

Mr. Snelling and Mr. Jeffries having volunteered their services to this place only, and considering that, as we had left the Dacota territory, we had no further necessity for Sioux interpreters, resumed their march homewards, the former gentleman to his father's garrison on the Mississippi, the latter to his residence on Lake Travers. As an escort they took with them corporal M'Phail, and privates Newman and Irvine, three men whose services were no longer required, and who behaved themselves well while with us. We are happy to add that this party reached its destination without accident.

On the 9th of August, Major Long left Pembina, and reached Fort Douglas the second day after. He estimated the distance by land at sixty-one miles. It had generally been rated at seventy-five miles, which is undoubtedly too much, as it has often been travelled in one day on horseback, and even in a light carriage, on the snow. After travelling about fifty miles on the west side, he crossed over to the east bank, which he followed until he came to the confluence of the Assiniboin and Red rivers, when he

again crossed the river and arrived at the Hudson's Bay Company's fort, where he was hospitably received by Donald Mackenzie, Esquire, chief factor, and one of the counsellors of the company. As soon as Major Long had explained to this gentleman the nature and objects of his party, and the circumstances which had induced him to proceed through the Company's territory, Mr. Mackenzie made a free and liberal offer of his services and assistance in any thing that depended upon him. This he did even before he had seen the recommendatory letter which Major Long had received from His Excellency, the Right Honourable Stratford Canning, Envoy Extraordinary and Minister Plenipotentiary from his Britannic Majesty; a letter, which, as it was very obligingly given by Mr. Canning, and as it no doubt contributed much to ensure to the party the very hospitable reception which we experienced while in his Britannic Majesty's dominions, we have great pleasure in inserting here.* It is impossible for us to convey in adequate terms, the very warm gratitude which we feel for Mr. Mackenzie's kind attentions. Independent of that assistance which his official situation enabled him to afford, he contributed to

* *Washington City, May* 1*st*, 1823.

SIR,

This letter will be exhibited to you by Major Stephen H. Long, of the United States' Topographical Engineers, who, for objects purely scientific, has been ordered to conduct an exploring expedition up the St. Peter's river, thence to proceed to the 49th degree of north latitude, and thence to the lakes on his return home. The American government, conceiving it possible that Major Long may have occasion to pass on his way through some of the British posts or settlements along the frontiers, have requested me to state the nature of the expedition, and to recommend that officer and his party, to the civilities of his Majesty's officers and subjects in the North-west Territory. It

all the comforts which we experienced in the subsequent part of our journey, by liberal additions to our stores from his own private stock. One instance will suffice to show how extensive and how particular was his attention. Observing that some of the gentlemen were fond of reading, and knowing from experience that a voyage in bark canoes is very tedious, unless it be relieved by books, he immediately offered, and insisted upon their accepting, some of the most interesting works in his library. Those who are fond of literature, and who reflect upon the distance at which Mr. Mackenzie was from all repositories of books, will fully appreciate the liberality which could induce him to part with the works of Milton, Hume, Cowper, &c. &c. and unless they be aware of the pressing manner in which he insisted upon the acceptance of these books, they will scarcely excuse the gentlemen of the party for thus robbing him of treasures very difficult to replace. The gentlemen of the party left Pembina on the 10th of August, in a barge belonging to Mr. Nolen, and which had been built in London; the soldiers were divided in three wooden canoes. The journey to the lower settlement required

is on this account that I furnish Major Long with the present letter, not doubting that it will afford you pleasure to treat both him and the party which he conducts, in case of their approaching your station, with attention and good offices suitable to the friendly relations subsisting between the two countries.

I am, sir, with truth and regard,
Your most obedient humble servant,
STRATFORD CANNING.

To any officer of his Majesty or other person having authority in the posts or settlements situated within his Majesty's North-western American Territories.

three days. The distance by water has been variously stated. Mr. Thompson, the able surveyor to whom we previously alluded, estimated it at ninety miles; we have seen it laid down at one hundred and eighty; our guide allowed it to be forty leagues. While descending, Mr. Colhoun admitted it to be one hundred and seventeen miles, but as he considered his estimate to be a low one, we may safely assume it to be at least one hundred and twenty miles. The general course of the river is north, but the stream is extremely winding; we never had before us a reach or view of more than one mile, and this only on one occasion. The breadth of the river, after leaving Pembina, is very uniform, and is about seventy yards. Its depth is not great. In many points its navigation was obstructed by shoals, and in one or two spots by primitive rocks apparently out of place; but the river was at that time unusually low. In an ordinary stage of water, it must afford a pleasant and safe navigation; its bed as well as the banks are muddy; they rise from eight to twenty-two feet. We saw along the bank trees, which, from the bark being rubbed by ice, seemed to indicate that the river at times rises at least fifteen feet. Our guide told us, but we are induced to doubt the accuracy of his statement, that sometimes it rises forty feet and inundates the prairies between Fort Douglas and Pembina, so that canoes are paddled over the prairies. Without admitting this, we may believe that in many seasons the river would afford ample scope for a steamboat navigation. There are no rapids, properly speaking, in the river; the current averages about one mile per hour. Sometimes the prairies approach to the edge of the water, but generally there is a line of woods which extends along the banks, on a breadth of from fifty yards to half a mile. This consists, near the margin of the river,

of a thick growth of willow, next to which comes cotton-wood, and higher on the bank, aspen, bass, elm, oak, &c.

At about seventy miles from Pembina, while we stopped for breakfast, we were informed that there was a salt spring in the vicinity; to this we immediately repaired; we found it to be in the bed of a brook, called Saline river; the brook was dry at the time; there was a stagnant pool of water, which contained probably about five per cent. of salt; the spring which supplies this pool must be a very large one. We were informed that this spring, which was worked during one season, had been abandoned, being considered the weakest in the country. We observed, with some surprise, the Salicornia herbacea growing very abundantly around it. We brought home specimens of it. Mr. Schweinitz states, on the authority of Mr. Nuttall, that this is the only inland locality of this plant, besides the Onondago salt springs in the State of New York, vide Appendix 1, Botany. At this place Lieut. Scott saw an antelope, (Antilocapra Americana, Ord,) but did not succeed in killing it. A singular fact respecting this antelope was that it approached very near to Mr. Say, without evincing the least apprehension; unfortunately he was at that time so intent upon the collecting of insects, that he was not even aware of its presence. This animal is not abundant here; we occasionally saw tracks of it, as well as of the elk and bear, on the soft mud near the river bank, but the most frequent tracks were those of the wolf. Mr. Say killed here a Muscicapa ruticilla and Totanus flavipes. But the most abundant game we saw were ducks and pigeons, of which we might have killed many, had we been able to spare the time; our sportsmen, however, occasionally fired at them and were generally very successful. In

the evening the soldiers caught a great many fish of the genus Hyodon, called there Doré.

Along the bank there is an abundance of bushes, bearing a small wild cherry; the Pembina, and several other berries, some of which are very pleasant to the taste.

Two observations for latitude were taken on the river; one about one mile below the mouth of the Wàsûshkwâtâpė, or Muskrat river, at noon on the 12th of August, gave for result, 49° 35′ 55″ north. The other made at the same hour on the 13th, and within three miles of the confluence of the Assiniboin with Red river, gave 49° 51′ 3″.

The first house of the lower settlement is situated about twenty miles by water above the fort, but the country is thickly settled only within three miles of the mouth of the Assiniboin. At the lower settlement there are two forts, one called Fort Gerry belonging to the Hudson's Bay Company; the other, called Fort Douglas, is the property of the colony; there are also two houses of worship, one of them of the Protestant Episcopal Church, erected and supported at the expense of the London Bible Society, who likewise supply the funds for a free school. The clergyman, who attended both to the church and school, had left there a short time before our arrival, on a visit to England. The other church is the cathedral of a Roman Catholic Bishop established there. His diocese extends north of the United States' boundary line, from the Rocky Mountains to Upper Canada. He is styled Bishop, *(in partibus,)* of Julianopolis. A Catholic school, instituted at this place by the Missionaries, and conducted upon the same plan as Mr. M'Coy's on the St. Joseph, appears to have been attended with the same success. The whole of the expenses of this Catholic ecclesiastical establishment is, we believe, defrayed by the Bishop of Quebec.

The population of the settlement amounts to about six hundred. There is an appearance of neatness, and even of comfort, in many of the cabins belonging to the Swiss and Scotch settlers. The agricultural improvements are daily becoming more respectable, and adding to the prosperity of the colony. The soil is not so good as at Pembina, yet large crops of grain have been obtained. It appears well adapted to the growth of wheat, barley, oats, and potatoes. Maize has not yet had a fair trial. Of wheat they have repeatedly obtained from twenty to forty and even more bushels to the acre. Perhaps the greatest desideratum at Fort Douglas is wood, which, growing only upon the banks of the rivers, is becoming scarce. They have a few tradesmen and manufacturers among them. A tanner, who appears to understand his business well, has been brought over, and makes very good leather from buffalo hides, so that they are not all at present reduced to the necessity of wearing moccassins. An attempt has also been made to convert the wool of the buffalo to some useful purpose. An association has been formed for this object, which has contracted with the Hudson's Bay Company for the requisite supply of skins; they pluck out the hair that covers the wool; and then separate the latter by an ingenious process into the different qualities, which are said to be no less than nine. The coarse wool is manufactured into a good substantial cloth; the fine qualities are sent to England, where, it is said, they find a ready market. Mr. Pritchard, who superintends this important establishment, kindly showed it to us, and communicated some interesting facts relating to it. It was in his possession that we saw a hat, manufactured by his brother in London, in which the beaver had been replaced by buffalo wool.

A number of gentlemen, formerly officers in the colony, have remained and settled here; some of them are represented as wealthy; several of them expect their families over. These, with the family of the governor, whose arrival was daily looked to, will form a small society, calculated to refine the manners of the colonists. It must be admitted that the choice of the settlers was in some respects unfortunate; instead of good agriculturists, a number of tradesmen and mechanics were brought over from Switzerland; some of them were watchmakers, unacquainted with the culture of the soil. We could not help pitying a poor man, who had been an apothecary in Switzerland; he was possessed of that pharmaceutical and chemical knowledge which the Swiss apothecaries generally have, and hearing of a settlement about to be formed on a large scale, imagined that one of his profession would be much wanted. He accordingly joined the party, stocked with aniseed, Palma Christi seed, &c. all which he soon found would be of no use to the colony or to himself. The place was healthy, but destitute of grain; his hopes of a botanical garden dwindled away at the necessity of handling a plough, and attending to the more important cultivation of wheat, potatoes, &c.

The history of Red river would, if correctly and impartially written, offer many useful lessons. The place was first visited by the French, and their arrival there is referred to the visit of the Chevalier de la Veranderie, who is said to have been the first French officer that travelled to the Rocky Mountains. He built a fort at the mouth of the Assiniboin, called it the Fort de la Reine, and garrisoned it with soldiers. The French continued to trade there alone for many years, but about the year 1767, the first English traders visited it: and, it appears, that

about fifty years since, it was a place of great resort both for English and French traders. At that time, or soon after, there were six opposition companies, which after a while dwindled into the famous North-west Company, one of the most active and enterprising trading associations that was ever created. The trade was then extremely profitable; in one season, a trader might almost realize a fortune. As an instance of what it was even eighteen years ago, we may mention, that Desmarais, the man who guided our canoes from Fort Douglas to Lake Superior, purchased at one time from an Indian, two packs of beaver skins, containing about one hundred and twenty skins, and weighing about one hundred and eighty pounds, for which he gave two, (three point,) blankets, eight quarts of his best rum, and a pocket looking-glass. These goods were rated by the company at thirty dollars, but had probably not cost fifteen. The beavers sold in Montreal for upwards of four hundred dollars; this was considered fair dealing with the Indians.

The first colony was planted in the year 1812, when Miles Macdonell, who was appointed its governor, built a fort on Red river. The colony throve indifferently well, but quarrels broke out between the colonists and the North-west Company's servants. We have no wish to enter into particulars on the subject of this unfortunate division; suffice it to say, that a disunion, founded upon commercial rivalry, had for a long time previous existed between the Hudson's Bay and the North-west Companies; the colony was considered by the latter as planted for the purpose of strengthening the interest of the former. Fears were expressed that the establishment of the colony would prove ruinous to their commercial transactions, as agriculture and a fur trade cannot flourish in the same country. Apprehensions were like-

wise entertained that the colony would civilize the Indians, and divert them from hunting. From these and other causes, the new settlers became involved in the quarrel. There were probably provocations and wrongs on both sides; finally the colony was assaulted by a party of Bois Brulés, supposed to be connected with the North-west Company; and in 1815, the inhabitants were all dispersed; they returned, however, to their homes, and were again assaulted in 1816, and again driven from their settlements, after the murder of their governor, and of about twenty of the colonists. From this moment a real civil war may be said to have been carried on between the servants of the two companies. Both appealed to the government of Canada, and to the British Ministers. For a while these complaints were unheeded, but finally the evil became so great that a remedy was sought for, and found in a combination of the two companies on terms which were not made public. A general amnesty ensued. The evil which has been done to this country, twenty years will not obliterate. The immense sums of money incurred in prosecutions, recriminations, &c. may be forgotten, but the lawless spirit inculcated on the Bois Brulés, who were engaged on either side, will require years to tame it. Even at this day the traveller feels that he treads upon dangerous ground if he alludes to it; for the spirit of party is not eradicated. We may, however, hope that the instructive lesson, that commercial rivalry must be kept within bounds, will not be forgotten, and that by the wise and conciliatory steps which the company has taken, the seeds of discord will be completely removed, and that the country will rise to that prosperity, to which its fine soil and good climate entitle it.

The terms upon which the colonists were brought hither,

varied probably in almost every case, according to the talents and abilities of the individual. It is probable that to all, great advantages in the way of land were offered, and even assistance in cattle, tools, &c. Within a few years, the great difficulties being removed, and the apprehensions of hostilities having ceased, the land has been offered for sale. The price was at first two dollars per acre; but this having been thought too high in the present state of the colony, it was reduced in 1823 to one dollar per acre. We cannot fail in wishing this colony success, because it will not, we think, vitally affect the interests of the fur trade, which is chiefly carried on to the north-west of the settlement; and because, even if it did, the benefits, and advantages, which would result from it, would be much greater than those arising out of that trade. When we take into consideration that the whole of the fur trade is limited to two ships of three hundred tons each, which sail annually from Hudson's Bay to England, and whose return cargoes of British goods are amply sufficient to purchase the furs, and supply the wants of traders, we will be convinced that the prosperity of England, either in a commercial or a manufacturing point of view, cannot be materially affected by the rise or decline of this trade. The evil which it has done to Canada has been frequently and justly deplored; it has allured many of her youths from the steady occupations of agriculture, to attend to the wandering pursuits of the traders; it has instilled into their minds a taste for extravagance and dissipation; it has accustomed them to lawless habits, which have been, for a century back, a subject of regret to the missionaries and to philanthropists. No doubt can exist that the conduct of the young men who have been annually sent out from Canada, and who were formerly termed the "Coureurs des Bois," has had more influence

in demoralizing the Indians of North America, than any other cause whatever. They have distributed liquor more freely, and more extensively, than any other traders; they have accustomed the Indians to that promiscuous intercourse, which destroys every virtuous as well as every national feeling; they have made them parties in their quarrels, thereby exciting them to acts of hostility against white men.

One of the greatest evils, which the colonists have experienced, was the abundance of grasshoppers, that almost ruined the crops for one or two years. This was only, however, at the lower settlement; none were seen at Pembina. Cattle appear to be very much wanted, and supplies are anxiously expected; some were brought over, at first, from England, they throve very well; after which others were procured from Mackinaw, and in 1822, a drove was brought by Mr. Dickson from Clarksville, but he lost many on the way. Another drove was daily expected at the time our party were there. Lord Selkirk had a fine farm, which he intended to stock with Merino sheep; but all, that were brought over, were destroyed during the dissensions. Hogs have not succeeded so well. Norwegians were brought over with a view to domesticate the indigenous reindeer and substitute them for dogs; and an establishment, called Norway house, was formed at the northern extremity of Lake Winnepeek, but it does not appear to have met with great success. Dogs are the most numerous of the domestic animals. Some care seems to be taken at present to prevent their roving at large as they formerly did, proving a great nuisance to the agricultural pursuits of the colonists.

Our camp was situated on a high bluff, about seventy or eighty feet above the level of Red river, near Fort Gerry, which is at the junction of the two streams. Fort Douglas lies about one mile below this on the river. The Assiniboin is a beautiful romantic stream, whose breadth, at its

mouth, does not exceed fifty yards, yet it is an important river on account of its length. We were informed that it was at least five hundred miles long; and it was given in evidence, during one of the numerous law suits arising out of the discussion between the two companies, that the Hudson's Bay Company's fort on the Riviere qui Appelle, (a tributary of the Assiniboin,) was distant four hundred miles from Fort Douglas. A little above the fort, the river is said to expand considerably. The name of this stream has of late been written Ossiniboin, but we believe the old spelling agrees better with the Chippewa etymology of the term, Assin, *stone*. As the district of land, ceded to the late Lord Selkirk by the Hudson's Bay Company, has received the official name of Ossiniboia, it is probable that this new orthography will prevail. The extent of this territory, as stated in Governor Macdonnell's proclamation, will be seen in Major Long's topographical report. (Chapter 13.) The United States' boundary line will, of course, cut off much of this province; still it will leave it nearly as large as the State of Georgia.

The prospectus of this colony, as published by the late Lord Selkirk, has been censured very harshly by many, who have taxed him with wilful misrepresentations, intended to mislead those whom he wished to enlist as colonists. This charge does not appear to us to be just. His prospectus presents the description of a really fine country, expressed in those terms of warm commendation which we would naturally expect from a mind of a sanguine and generous disposition, such as the whole course of his public and private life indicates that of the distinguished founder of this colony to have been. The great exertions and sacrifices, which he made in behalf of the settlers, prove that he was sincere and ardent in the

wishes which he manifested for their success; he expended a large fortune, and, what is a better test of his sincerity, he underwent many personal hardships and dangers, to protect his settlers against those whom he considered as the persecutors of the colony. Whatever opinion may therefore be entertained of the expediency of his measures or of the policy of his colonial system, all must acquit him of any selfish or interested motives, or of any abandonment of those whom he had induced to settle on Red river. It is not from the success or failure of a measure, that the motives of its promoters are to be deduced; and in this case it appears to us by no means improbable, that if the colonists had not been involved in the quarrel with the North-west Company, the Red river settlement might have realized the hopes and wishes of its founder.

One of the principal hardships which the colony had to undergo was from the severity of the winters. The maximum of cold, or lowest point to which the thermometer descended in the winter of 1822–23, was –52° (F.) But this is amply compensated by the warmth of the summer; and the rapidity of the vegetation makes up for the shortness of the season. From the quantity of wild fruit about here, we are led to believe, that with a little care, good orchards might be obtained. The fruit consists of apples, plums, pembina, and several varieties of raspberries, one of which is deeper coloured, smaller, and more oval than the domestic raspberry of our gardens; it partakes of the flavour of the strawberry.

We were detained several days at the settlement, by the preparations required for our navigation; but the time spent there was rendered very interesting, by the singular association of features which the country presented, as we observed it while seated on the elevated bank upon

which Fort Gerry stands. The beautiful confluence of the Assiniboin and Red rivers washed the base of the bluff. Extensive prairies, upon which a number of domestic cows were grazing, lay before us, while a young buffalo bull, which had been presented to the bishop, was seen on the opposite bank, employed at labour. Both the banks of the river displayed occasional groups of Indian lodges and European tents, belonging to the Indians, half-breeds, or to our party. On the stream, a number of canoes, constructed either from logs or birch bark, were seen occasionally gliding before us, under the quick and dexterous management of the paddlers; while some, filled with Indian boys, engaged in successfully angling for beautiful little silver fishes, the hyodon of the naturalist, were moored immediately in front of us. Canadian carters were frequently passing by, urging on their spare and lazy horses, by the often and angrily repeated words, "marche donc." Several Indians with their squaws, and children without number, of every possible shade of colour between the red and white, idled away their time upon the bank; numerous dogs played, barked, or snarled, at the gateway of the fort. These and many other features, which were peculiar to this spot, offered us food for pleasant contemplation. But an object, which once observed rivetted our attention, was the sight of a crazed woman standing alone in a canoe, which she was steering with apparent ease. She had a tall commanding figure; a soft expression of melancholy beauty, such as is often seen in the women of mixed European and Indian blood. Her dark eyes had, from the disordered state of her mind, received a wild and peculiarly interesting expression. She struck the water at irregular intervals with a long paddle which she held by the middle, singing at

the same time a melancholy air, that struck our ear melodiously and sweetly, as we heard it from a distance. Perhaps, however, it was but the effect of an association of ideas, which lent a melancholy interest to her voice. We made some inquiries about her, and were told that she was the wife of one of the settlers. She was a half-breed, whose insanity was supposed to have sprung from a religious melancholy. Being one of those whom the missionaries had converted, she had become very pious, but her intellect was too frail for the doctrines which had been taught to her; in endeavouring to become familiar with them, she had been gradually affected with a malady, which at that time seemed incurable. While we were listening to this story, the wind heightened, the evening approached; all the canoes had disappeared from the river except her's, which she still kept on the stream, notwithstanding the high breeze which roughened its surface. We expressed our apprehensions lest her canoe would be upset, but we were told that she understood the management of it as well as if possessed of reason; her only pleasure and occupation seemed to be to move about alone in this frail bark; and her friends, believing that there was but little danger in it, indulged her in this her only diversion. Meanwhile the canoe was swiftly impelled from us towards the opposite bank; the loose wrapper which she wore, acted as a sail that received the wind and wafted her across. We saw her land in safety, and felt easier when we observed the poor maniac alight from her canoe. The next day she crossed the river, came towards us, and with much modesty presented to us a small parcel of papers, neatly folded up and secured by a thread; she desired that it might be given to her mother in Montreal. There was no su-

perscription. We opened it, it contained but a printed sheet of a religious tract. Having performed her errand, she made a slight inclination and passed away.

The time of the party was likewise occupied in hearing Mr. Mackenzie relate some of the interesting adventures of his life. This gentleman, who is of the family of Sir Alexander Mackenzie, has spent twenty-four years in the Indian trade, and has travelled over the greater part of North America. He wintered as far north as the sixty-second degree of latitude, on the river which bears the name of his distinguished kinsman. He was one of the party consisting of Messrs. Hunt, Crooks, Stewart, Mathews, &c. who in the employ of Mr. John J. Astor, of New York, crossed the Rocky Mountains, and penetrated to the mouth of the Columbia, where they made the first settlement for the American Fur Company. Mr. Mackenzie spent ten years on that side of the mountains. In the course of his travels he followed for upwards of six hundred miles the stream usually called, in Lewis and Clarke's travels, the Multnomah, but the true name of which, according to Mr. Mackenzie, is the Wallamut.* Of all these he communicated many interesting particulars, as well as of the animals found in that part of the country.

We had an interview with an old Chippewa chief, the leader of a party that resides near Red Lake. Although he dwells in the territory of the United States, yet as we met with him on British soil, we confined our conversa-

* Mr. Henry, a trader, whom we met at Fort William, and who likewise imparted to us some valuable information concerning that part of the country, did not consider the Wallamut to be the name of the stream itself, but of a fall of about forty feet, situated in the river, a short distance above its confluence with the Columbia. The river itself has a distinct name, which Mr. Henry could not recollect at the time.

tion to general topics, avoiding all political subjects. This man had a peculiar expression in his face, which induced Mr. Seymour to take a likeness of him; it is the left hand figure of Plate 3. We have omitted to record his name; by the French traders he is called the "Blackman," *homme noir.*

The position of Fort Gerry was determined from a series of observations to be in latitude 49° 53′ 35″ north, and in longitude 97° 00′ 50″ west.

On Sunday, the 17th of August, our preparations being finished, we left this place, at which we had experienced much kindness, not only on the part of Mr. Mackenzie, but also of Mr. Kemp, the acting governor,* and of a number of the inhabitants.

We embarked in our canoes at noon, and proceeded down the river. Our party, which had been reduced at Pembina by the departure of six of our fellow travellers, was reinforced here by the addition of a Chippewa interpreter, a pilot, and nine canoe-men, of whom five were Canadians, and four Bois Brulés. Our numbers therefore amounted to twenty-nine. We were divided into three bark canoes, known by the name of "canos du nord." Although these are made nearly on the same model, yet there is great difference in their speed, burden, soundness, &c. according to the skill manifested in their construction. A canoe of this kind is generally constructed of ribs of cedar bent so as to impart to it its proper form, the ends being secured to a band that forms the superior edge of the vessel, and acts as a gunwale; over these ribs the birch bark is

* Mr. Bulger, the late governor, left Fort Douglas a few days before our arrival. A new governor was daily expected; in the interim the colony was governed by Mr. Mackenzie, as chief factor, and Mr. Kemp as acting governor.

laid in as large pieces as possible, generally so that there shall be but two longitudinal seams, and two or three transverse; between the bark and the ribs very thin splints of cedar are placed so as to prevent the bark from splitting; all the joints are sewed with long threads obtained by splitting the roots of a tree called by the voyagers *epinette,* and which is probably a spruce.* To this thread the term w'âtâ'p, used by the Chippewas, is applied by the Canadians; the seams as well as the cracks are covered with pitch, (called by the Chippewas Pėkė,) made of the gum of the epinette; this is applied hot, and renders the canoe water tight. In this manner a little vessel is obtained, very well calculated for travelling on these waters, as it will carry a burden of upwards of three thousand pounds; and when any obstruction in the navigation is encountered, the cargo may be discharged, and the canoe easily carried by two men. A good view of these canoes may be seen in Plate 11. Those which we used were thirty feet long, by about four feet wide in the middle, and perhaps thirty inches deep. A number of transverse bars serve to keep the canoe in its proper shape. The seats of the paddlers are suspended to the gunwale. The bow and stern are sharp and turned upwards. The great objection that attends the use of bark canoes is the difficulty of keeping them water-tight. It requires the greatest attention to prevent them from touching a rock, or even the shore, as they would otherwise break; hence they are never brought near to the bank; two men keep the canoe afloat at a distance, while the rest of the crew load or unload her; the canoe is unloaded every night, raised out of the water, and left on the beach, bottom upwards; this is also occasionally done when they stop during the day; it affords an

* Abies alba.

opportunity of allowing the canoe to dry, otherwise the bark absorbs much water, and becomes very heavy. All motion on the part of those on board is to be avoided, as it causes the pitch to crack, and renders the canoe leaky. This mode of conveyance is the only one in use in the country, and answers very well; it requires, however, skilful men to manage the canoes. Much art is particularly displayed by the bowsmen and sternsmen to steer them; the middle-men have only to paddle fast or slow, forward or backward, as they are directed. In steering through rapids the bowsman has the most difficult post; he is, therefore, always considered to be the captain of the boat; his wages, as well as those of the man in the stern, are higher than those of the middle-men. When several canoes go together, they constitute what is termed on those waters a brigade, and to these a pilot or guide is appointed, who is generally an experienced man, responsible for the loss of the canoes, and to whom all are subordinate; he is not obliged to paddle himself. We had engaged the services of one Baptiste Desmarais, who proved a faithful and active guide, well skilled in his business; he conducted our brigade with dexterity and success. When they carry passengers, the guides are sometimes apt to assume too much authority and consequence. The responsibility which attaches to their station, in case of the loss or detention of the canoes under their guidance, requires that they should direct the march, and fix upon the proper places and times to encamp; this gives them an opportunity of displaying their brief authority in a manner that is oftentimes unpleasant to those not accustomed to it, but in this respect we had but little cause to complain of Desmarais, for we found him obliging and respectful in his demeanor to the party.

Our soldiers, who at first were unacquainted with this

kind of navigation, soon became expert paddlers, and answered well in that capacity; but it requires the long experience of the voyagers to render them as cautious and handy in the management of these canoes as their frailty requires. In this respect we found the Bois Brulés far superior to the Canadians.

Our journey down Red river was performed in a day and a half; we encamped the first night on a small island, about thirty-five miles below the settlement; and the next morning at an early hour we reached the mouth of Red river, which is situated forty-three miles below that of the Assiniboin. The stream retains much the same characters as above Fort Douglas. There are several rapids, more remarkable for the shallowness and rocky nature of the bed than for the swiftness of the water. At the first rapid, which is about twelve miles below the fort, the banks cease to be muddy; they become gravelly, the soil is thin and of a pale hue; the growth was principally small aspen. At twenty-eight miles, we saw limestone *in situ;* it is a horizontal secondary rock, such as probably underlays these prairies. It was the first rock which we saw in place after we had left the primitive islands in the valley of the St. Peter, unless indeed the rapids in Red river be occasioned by ledges of primitive rocks in place, which is not impossible, but which we could not ascertain at the time that we passed over them. We observed in the limestone no organic remains, although it probably contains some. This is the only place where limestone has been found, by the settlers, at the surface; it is therefore resorted to for the lime used in building at the fort, as well as for the tan yard, and for the other wants of the colony, &c. At the island upon which we encamped on the 17th of August, the river was much wider; the eastern channel was small, but the west-

ern was about two hundred yards wide. This was the second island which we had observed on Red river from its head to this place; the first island was but a short distance above. Below this place there are several other islands; they are for the most part small and thickly overgrown with aspen. Among the remarkable features of Red river may be enumerated its total want of islands, except near its mouth, and the circumstance that it has no bottom or valley properly speaking; it runs in a mere trench in the prairie. Towards the mouth of the river the country becomes an impenetrable swamp.

Having already enumerated the tributaries of Red river south of the 49th degree, we shall briefly note those which occur between Pembina and the mouth of the river. These consist, on the right bank, of the Reed-grass and Muskrat rivers; on the left, of Swampy, Plumb, Gratiats, Saline, Muddy, Assiniboin and Death rivers.

Reed-grass river is by the Chippewas termed Pėkwiònûsk; at its mouth it is twenty yards wide; it rises near the Lake of the Woods, and, as we were told, within two leagues of it. The interval which divides its source from the lake being marshy, the canoes are dragged through it. Desmarais informed us that he would return by that route, and that he could walk in three days from its source to its mouth.

The Wâsûshkwâtâpė, or Muskrat river is twelve yards wide at its mouth.

Swampy or Pėtòpėk river is a mere brook; so is the Pėkâsûn, or Plumb river, both of which were dry at the time we saw them. Below these a small rivulet receives the name of Kâòmėnâkâshė, (Gratiats of the French.)

Saline we have already stated was a dry brook. The Wėnâgòmò, or Muddy river, is also inconsiderable. The Assiniboin has been described. It receives, as we were told,

several tributaries designated by the names of Cypress, la Souris, Mushroom, Au Milieu, Qui Appelle, &c.

The last of the tributaries of Red river is Death river, or Onépówė Sépė, a small stream which has received this gloomy name from the circumstance that two hundred and fifty lodges of Chippewas are said to have been destroyed there, about forty-five years since, by the Dacotas.

Red river discharges itself into Lake Winnepeek by four channels.

Lake Winnepeek receives its name from the muddy or sallow appearance of its waters; Wė signifies muddy, and nėpė, water, in Chippewa. It is a large sheet of water with low marshy banks to the south and south-west. To the north-east the shore swells into broad hills, of no great elevation, which are covered with a thin growth of pine,* spruce,† juniper,‡ tamarack§ or tacca-mahac, red cedar,‖ white birch,¶ and a sort of poplar similar to the balm of Gilead.** Among the shrubs there are rose bushes, pembina, and a bush yielding a small dark blue berry, resembling in form and colour the huckleberry, but sweeter and higher flavoured; by the French traders it is called *poire*; it has received the English name of service-berry; the Chippewas call it O'sâkwâkkò mînân.†† Lake Winnepeek is about two hundred and seventy miles long, by eighty broad in its widest, and fifteen in its narrowest part. Its general direction is about north-north-west. Its shore is much indented. We coasted it for about thirty-five miles, very near to its south-eastern extremity; proceeding from one projecting point to another, our course, which was at first o

* Pinus alba, nigra, &c.
† Abies Canadensis, Mich.
‡ Juniperus communis.
§ Laryx Americana, Mich.
‖ Juniperus Virginiana, Mich.
¶ Betula papyracea.
** Populus balsamifera.
†† Mespilus arborea, Mich.

little east of north, soon became due north, (by the compass,) and continued so until we came near to the entrance of Winnepeek bay. As we travelled near to the eastern shore, we always kept land in sight on our right, but on the left, the eye met with nothing but an uniform sheet of water, limited by no land, diversified by no island. The wind blew somewhat fresh when we first reached the lake, so that a long swell upon its surface gave us an opportunity of admiring the buoyancy of our canoes. After travelling eighteen miles on the lake, we landed on a fine pebbly beach, which we were told was encompassed in the rear by a deep swamp called the "Grand Marais." This beach was covered with pebbles and boulders of sienitic and calcareous rocks, which, from their aspect, showed that we were near the junction of the primitive and secondary formations. After having dined and repaired one of our canoes, which was leaky, we proceeded on our journey.

Lake Winnepeek appears to have been the same as was formerly called by travellers, Lake of the Assinipoils. It is mentioned under this name by Lahontan and Charlevoix; Carver gives it its modern appellation. The situation of this lake, in the centre of the continent of North America, is singular and interesting. Few lakes receive so many and such large streams; by means of these, and of the rivers that flow from it, a direct communication is kept up, not only with several distant points of the Eastern or Atlantic Ocean, but also with the Pacific or Western. An observation for latitude taken on the shores of this lake, gave 50° 41′ 3″ north. Previous to entering the lake, we passed two small Indian villages, one situated at Death river takes its name from that stream, the other receives an appellation indicative of its situation at the mouth of Red river.

On the 19th of August we reached a peninsula, which lies at the mouth of the bay into which Winnepeek river discharges its waters. This peninsula was then under water, so as to leave exposed merely an island of about four miles long and three broad, usually called Elk Island. In order to avoid passing all round it, it is usual to unload and carry the canoes and their cargo over this peninsula, which forms two small portages of about thirty yards long. Our canoes passed, however, without difficulty, owing to a high wind which, sweeping the surface of the lake from the north-west, had raised the water upon this bar. At this place our canoes were steered nearly east. This was considered the most distant part of our journey. We reached it in one hundred and twelve days, having travelled over upwards of two thousand and one hundred miles, without any accident, and with but little difficulty. At this place we left the track usually travelled by the Hudson's Bay Company's canoes, to take that formerly followed by those of the North-west Company. The brigade that carries the furs from Fort Douglas to York Factory, the ancient Fort Bourbon of the French, passes to the west of Elk island. It performs its voyage in about fifteen or twenty days. On its return, the voyage requires from thirty to thirty-five days, on account of the length of time consumed in ascending the streams. It is usual for the Company's ships to leave England together, with supplies of goods; they generally sail about the last of June, arrive at York Factory about the middle of August, and return to England with the furs brought down in the spring. The brigade does not wait their arrival, but carries and distributes at all the posts, the goods imported the preceding year, so that there is always one year's supply in advance at York Factory.

On reaching the outlet of Winnepeek river, we observed a great change in the aspect of the water, which was clear and transparent; this was soon accounted for by meeting with sienitic rocks in place, and we were informed by our guides that similar rocks extend all the way up the river. About a mile beyond this we reached Fort Alexander. The junction of the primitive and secondary rocks is therefore about 50° 45′ of north latitude and about 96° 30′ of west longitude. It appears probable, from all the information which we have collected, that the whole of the eastern shore of Lake Winnepeek, is occupied by a primitive formation, while the western is composed of secondary, and these probably limestone, rocks. This accounts for the fact that the prairies are limited to the east by that lake, while they extend as far north as the Saskatchawan and to a considerable distance up that stream. It appears to us by no means improbable that the excavation of this lake was occasioned by the easier decomposition of the strata at the junction of the two formations. No where, perhaps, upon the surface of the earth, is a difference in the geological characters of the country attended by a more striking diversity in the superficial or topographical aspect. We observe here, that wherever the primitive rocks prevail, the country abounds in lakes, swamps, short streams filled with falls and rapids, as is the case with the whole country which extends from Lake Winnepeek to Lake Superior, and which reaches nearly to the Falls of St. Anthony on the Mississippi, while the secondary formation is covered with fine high and dry prairies. The track which our party followed must have been very near to the eastern limit of the secondary or prairie country, as all the eastern tributaries of Red river or the St. Peter, are represented as rising in those small lakes and lagoons. It would be curious to ascertain

whether the small group of lakes called Devil Lake, &c. situated between the two Coteaux des Prairies, may not be occasioned by a reappearance of primitive formations at that place.

Fort Alexander, usually called "Fort du Bas de la Riviere," was one of the most important posts of the North-west Company, being a distributing one, whither all the goods and furs were sent. Its position was in this respect well chosen, but it has now lost all its importance. One of our canoes being very leaky, we determined to make it undergo a complete repair, and with this view remained there a day. The situation of Fort Alexander, surrounded with marshes, restricted our walks and confined us to the immediate vicinity of the establishment. Its position was ascertained, by observations, to be in latitude 50° 36' 30" north. It was at this place that we saw a buffalo bull and cow, with their calf, associating with domestic cattle. They were young, but had been so far tamed as to come and lick salt on the hand, even of strangers. Their size appeared very great compared with that of the European bull. Although but three years old, the buffalo bull measured within half an inch of sixteen hands; this was inclusive of the hump. We were told, that before the cow calved she ran several miles into the woods, and remained there some time. When the calf was found, it was very wild, but at the time we saw it, it had become at least as tame as a domestic calf.

A question, which has been much discussed by travellers, is that of the supposed periodical rises in the lakes; we do not propose to take part in this discussion at present, but we may state that we observed at Fort Alexander an appearance, such as has probably more than once been mistaken for an effect of tide. On our arrival, we pitched our tents upon a sort of wharf projecting into the river, and

elevated about two feet above the level of the water. In the afternoon a high wind blew from the lake, and accumulated the waters into the bay, so as to cause them to overflow the wharf and oblige us to remove our tents. The next morning, the waters had subsided to their former level. Had we not been aware of the accidental cause which produced this local rise, we might probably have mistaken it for the effect of a regular or periodical tide, which it resembled very much.

During our stay at Fort Alexander, we were politely treated by the superintendant, Mr. Bell, at whose table we ate of a fish new to us, called in those parts a sturgeon, but very unlike the sturgeon of our waters. It was well tasted, with a good firm flesh, and tolerably rich; it is the principal subsistence of the residents upon those waters. Mr. Bell likewise offered us some Buffalo meat, (the tongue and hump,) that had been salted; it was very good, and in our opinion far superior to the jerked meat. We inquired why the salting was not usually resorted to instead of the jerking of the meat. Salt is so abundant on the prairies, that the expense or trouble would probably be but little greater. We were informed, however, that the prairie salt did not preserve flesh as well as that which was brought from England, with which the buffalo of which we had eaten had been cured. It is probable that in the salt of the prairie there are impurities, perhaps deliquescent salts, which render it unfit for the preservation of meat unless purified.

In the afternoon of the 20th, we resumed our journey, and ascended the bay about six miles, with a fine fair wind, which allowed us to spread a sail. We afterwards entered Winnepeek river, and found it to be a most majestic and impressive stream; its width is considerable, but is very variable, as it runs through a primitive formation in

which it has excavated basins of irregular dimensions connected by narrow channels, through which the whole volume of waters, which is very considerable, proceeds with an inconceivable rapidity. The rocks through which it passes are decidedly primitive, but assume that chaotic appearance, (if we may be permitted to apply the term,) which we had already observed in the primitive rocks of the valley of the St. Peter. We can account for the features which they present but by supposing that they were formed under the influence of a very great crystalline force, which was disturbed by some extraneous causes. Hence we observe within a small compass a number of different centres of crystallization at which different rocks were probably forming at the same time; within a few feet of each other there was a tendency to form gneiss, or sienite, granite, or mica-shist, &c.; the consequence of which is that, at those centres, we observe distinct and well characterized rocks, while the intermediate space is filled by an irregular and rapid transition from the one into the other. We observed no distinct signs of stratification. At first we were inclined to refer this mode of formation, though on a much more gigantic scale, to that of the Schnecken-stein or topaz rock of Saxony. But we soon observed that the difference was immense, for while this exhibits an union of masses of homogeneous composition, differing only in position; the rocks of the Winnepeek do not present the "platten und grosmassigen absonderung" of the Wernerian school; they display no such homogeneous composition, and no division into masses; they on the contrary exhibit a connexion between all the parts, a fusion of the one into the other.

At one spot, (Portage de l'Illet,) we observed a granite with an excess of feldspar throughout the mass, which occasions in it a fine lamellar structure: this is however in-

terrupted in numberless places by veins of coarse-grained granite. In some cases we see in these veins *apparently* fragments of other rocks imbedded in them. These fragments, however, are always composed of one or more of the four simple minerals which constitute the whole mass, viz. quartz, mica, feldspar, and amphibole. Although they present the appearance of fragments, still we see no reason to doubt their being of contemporaneous origin; indeed, when examined with the microscope, we have frequently traced a gradual passage of the feldspar of the vein into that of the imbedded fragment; it was not a mere impregnation of the rock by the feldspar, as is often observable in the vicinity of metallic veins, where the rock has received a portion of the metal of the vein; but we could trace an uninterrupted union in the crystallization of the feldspar of the vein with that of the imbedded mass. In some cases also, veins posterior in formation to the mass of the rock were distinctly observed. They were frequently seen intersecting older ones in a gneiss rock, and exhibiting very beautiful and diversified instances of a shift or slide of the older vein at its intersection by the more recent one.

In the afternoon, we passed in the river several rapids and falls, which occasion what are called by the voyagers the "Décharges" and the "Portages." The former term is applied whenever the obstruction is but a partial one, in which case the canoe is lightened, and either paddled or towed over the rapid. In such cases the passengers always leave the canoe, and as much of the baggage or load is taken out as the shallowness of the water requires. The portages are those places where the obstruction being greater, the whole of the cargo, as well as the canoe itself, has to be carried over; these vary much in length. We

met with seventy-two between Lake Winnepeek and Lake Superior; the shortest was but about five yards, while the longest was nearly four miles long. Many places are considered as decharges or lightening places, when descending the stream, which by ascending canoes are enumerated as portages. This occasions some confusion in the terms. The remarkable points in this navigation are so numerous that it is difficult for the Indians or the voyagers to find names for them; hence the terms which they apply are at best insignificant. They are frequently repeated, and oftentimes quite inapplicable. One of the characteristic traits of the Chippewas is to give names directly the reverse of the property which the object presents, as a grove was by the Romans called *lucus, (á non lucendo.)* We observe this practice to prevail with our Bois brulés canoe-men, who had no sooner seen our black man, Andrew, than they immediately agreed among themselves to apply to him the term Wâpishkâ, which means white. This nickname was not given to him, however, in derision, as that of snowball is frequently applied to those of his colour among civilized men; neither was it with a view to wound his feelings, for he was never, as we believe, made acquainted with the signification of this term.

As soon as a canoe reaches a portage, a scene of bustle and activity takes place, which none can picture to themselves but such as have seen it. The goods are unloaded, and conveyed across, while the canoe is carried by the stern and bowsmen. As soon as they have reached the end of the portage, it is launched and reloaded without any loss of time. An obstruction of one hundred yards does not detain them more than twenty minutes. We had occasion, however, more than once, to regret their speed, which caused them to toss our baggage very unceremoni-

ously, using it as they would packs of furs, which are so made up as not to be injured by this rough treatment. The whole care and attention of a voyager seems to centre in his canoe, which he handles with an astonishing degree of dexterity and caution.

Voyagers compute distances on the water by *pipes*, which are the intervals between the times when they cease to paddle in order to smoke their pipe. We cannot determine, however, the length of a *pipe*, having found it to vary according to the hurry of the voyagers, the peculiar disposition of the guide, the nature of the weather, &c. &c. When a portage exceeds half a mile in length, it is generally divided into what are termed *pauses* or distances travelled without stopping to rest. These also vary much in length according to the greater or less difficulty of the portage, its length, &c. A pause averages about a third of a mile.

On the 20th of August, we passed three lightening places and three portages, none of which were long. We encamped immediately above the Portage des Chenes, having travelled fourteen miles. The evening being very favourable for observations, Mr. Colhoun determined the position of this portage to be in latitude 50° 31′ 30″, and in longitude 95° 55′ 5″.

It was at our evening's encampment that the splendid scenery of the Winnepeek first displayed itself to our view, realizing all that the mind could have fancied of wild and sublime beauty, and far surpassing any that we had ever seen. The characters which we admire in the scenery of the Winnepeek, are the immense volume of waters, the extreme rapidity of the current, the great variety of form which the cascades and falls present, and the incomparable wildness of the rocky scenery which produces these falls, and which contrasts by its gloom, its im-

moveable and unchangeable features, with the bright, dazzling effect of the silvery sheet of water, passing from a smooth and unruffled expanse, to a broken and foaming cataract. It is in the effect of the rocky bed of the Winnepeek, that its numerous falls surpass all others which we have seen; the cataract of Niagara, which far exceeds them in volume, is uniform and monotonous in comparison; the horizontal ledges of secondary rocks of the latter are as far inferior in picturesque effect to the dark water-worn granite and sienite of the former, as the height of the bluffs at Niagara exceeds that of the rocky banks of the Winnepeek.

The falls on this river have another advantage, which is, that the whole country has a picturesque appearance, which prepares the mind, and keeps it in a proper disposition, to appreciate the splendour of its cataracts, while the country around Niagara is flat, uniform, and uninteresting.

On the Winnepeek we have constantly in view changes in the rocks, which contribute to those of the surface; they present at times the shistose appearance of a gneiss and mica-slate, which disappears at the recurrence of the dark-coloured granite or reddish sienite; these, being filled with veins of feldspar, display on a gigantic scale the beautiful striped appearance, which has given to some of the marbles of Italy their well-deserved celebrity.

The place of our encampment was characterized by one of those peculiar effects of water, which, once seen, leave an indelible impression upon the mind. After having passed over numerous rocks, which form diversified cascades, (the whole height of which is about thirty feet,) the water is suddenly received into a basin enclosed by high rocks, where it is forced to sojourn awhile, by the small size

of the aperture through which it issues; here the waters present the characters of a troubled ocean, whose waves rise high and beat against the adjoining shores, and against the few rocky islands which are seen in the midst of this basin; it is to this character that the spot owes the name which it receives from the natives, "the fall of the moving waters." They may be called the lower falls of Winnepeek river. We reached them in time to watch the beautiful effect of the setting sun, whose beams reflected by the stream imparted to it the appearance of a sea on fire. This was soon replaced by the moon, which cast a more placid light upon the waves, and heightened the charm of the scenery by the melancholy mantle which it spread over it. One of the most imposing characters of these falls is the tremendous noise which they produce, and which, in comparison to their size, is thought to exceed that of Niagara, Montmorency, Schaffhousen, St. Anthony, the Cohoes, or other falls which any of our party have ever seen. A scarcity of vegetation covers these rocks and contributes to the picturesque effect of the spot. Instead of the heavy forests which formerly sheltered Niagara, we have here a spare growth of aspen, birch, spruce, and other evergreens, whose size, generally small, adds to the wild and barren appearance of the rocks. The night which we spent near these falls, was one of the most interesting in the expedition; our tents were pitched so that we had a view of the splendid effect arising from the play of the moonbeams upon the surface of this ocean-like basin, and our eyes were constantly bent upon it until the noise of the cataract lulled us to sleep.

The artist could not behold, without rapture, a scene so worthy of being painted, and accordingly Mr. Seymour employed all that remained of daylight in sketching its

principal beauties. In this he was well favoured, as a long projecting rock in the bed of the stream, affords a satisfactory and comprehensive view of all its features. As these were the finest falls on Winnepeek river, we should have wished to represent them in this work, but it was found impossible to retain their effect when reduced to the required size. We found near this a fragment of a mineral resembling the phonolite or klingstein shieffer. It contained small cubic crystals of iron pyrites. It was angular, and probably broken from a neighbouring rock, but we could not discover it in its original site.

The next day, being the 21st of August, we reached an expansion in the river, that forms a small lake called Lac du Bonnet, at the upper end of which we encamped. This lake is about fifteen miles long, and from six hundred yards to four miles in breadth; it presents a fine glassy and smooth surface, free from any current; this afforded to our paddlers a relaxation from the hard task of working up stream. Previously we had passed one *decharge* and three portages; of these, only one was fatiguing; it was about one mile long. At these portages, the rapids, though very fine, are not to be compared to the lower falls. The general features of this country still continued the same; the rocks at times attained a greater height, though they never rose into hills. At one of the portages we observed small black crystals, probably of tourmaline, shooting through the mass. A little beyond this, at the upper "Portage du Rocher du Bonnet," a fine white clay was seen, in which small fragments of lamellar feldspar were observed. This was evidently a kaolin, or decomposed feldspar; it appeared to be very abundant; at the surface where we saw it, it was much intermixed with the soil which appeared somewhat deeper and better than usual,

but, we doubt not, that with a little exertion the clay might be obtained perfectly pure, and well suited to the manufacture of porcelain. A number of blocks of blue limestone, which we saw at some of these portages, led us to believe that we were then at no great distance from the secondary formations. Our evening encampment was, however, upon a very fine mass of granite, projecting into Bonnet Lake. The rock likewise appeared in insulated masses in the middle of the lake. These are, for the most part, destitute of vegetation. As we proceeded, we observed that the trees of deciduous foliage had almost disappeared, and that their place was supplied by a greater abundance of evergreens, such as tamarack, juniper, spruce, white pine, pitch pine, &c. Among the bushes we chiefly remarked the huckleberry, raspberry, black currant, and a wild cherry, which was then ripe, and which, notwithstanding its slightly astringent taste, was palatable. Among the birds Mr. Say saw the cedar-bird,* fish-hawk,† kingfisher,‡ kildeer, the black-headed tern, and numberless ducks. At the evening encampment, we observed on the shore myriads of dead bodies of a new species of ephemera, Baëtes alba, (Vide Appendix I. Entomology,) cast on it by the waves, and after sunset a very numerous swarm of the same insect collected over the surface of the water where they did not, however, remain long; they totally disappeared before we retired to rest. We saw several families of Indians that came up to us in small and very neat bark canoes. The master of one of these was very desirous of exchanging with us a handsome wooden bowl for some pemmican, but as we had none to spare, we declined his

* Bombycivora Carolinensis. † Falco haliætus.

‡ Alcedo alcyon.

offer. Another canoe came up soon after to exchange dried moose meat for powder and balls; this we agreed to, and anxiously waited for our next meal in order to taste of this new food. Whether it was owing to a bad choice of pieces, or to the nature of the meat itself, we know not, but certain it is, that it was found very inferior to the jerked buffalo meat; we found it dry, tough, and tasteless.

On the 22d, we proceeded through the upper part of Bonnet Lake, and soon reached the rapids. The current was so swift, and the obstructions so great, that paddling was found unavailing, and the voyagers preferred *setting* the canoes with poles; in order to diminish the load the soldiers were landed; they walked along the shore. Although the bed of Winnepeek river displays in many places larger falls, and bolder features than at this spot, yet there was no part of the stream which pleased us more than that which lies immediately above the lake. The river presents so many and such varied appearances, produced by the rush of waters over the rocky barriers which extend across its bed, that it was impossible for any of us to remain uninterested spectators of its wonderful scenery. Although the rocks rise but to a moderate height, their outline is very bold; the current at all times swift, often partakes of the nature of a torrent, and occasionally gives rise to beautiful cascades. The corroding effect of the stream upon the rock has produced many basins or coves in which the water forms eddies, and, not unfrequently, presents a smooth expanse, contrasting with the rough billows of the adjoining torrent. The red colour of the sienite is relieved by streaks of black mica which intersect its surface, and give it the appearance of designs executed on a gigantic scale. The trees which cover this rock offer to the eye a pleasing aspect: the aspen, distinguished by the

silvery white of its bark, and by its leaves lightly quivering at every breath of air, is intermixed with birch, and occasionally with spruce trees; a dense and almost impenetrable undergrowth of firs forms a sort of curtain along the banks of the river, and is interspersed with bushes loaded with plums, haws, pembina, &c. One of the objects which contributed most to enliven the scene was the great abundance of fish in the river; they were frequently observed leaping out of the water; for few streams are so well stocked with fish as this is; they are principally the sturgeon, salmon, pike, &c. Over these falls eagles and hawks soared high in the air, watching for the easy prey, which they derive from the numbers of fish, that are wounded or killed by being hurried against the rocks by the irresistible force of the current. Several canoes of Indians were also seen on the stream engaged in fishing; Chippewa lodges, constructed of bark, and bleached by long exposure to the air, formed small white specks which reflected the rays of the sun, and were visible at a great distance. As we proceeded along these rapids our canoe-men entertained us with songs more remarkable for the wildness and originality of their notes than for the skill and method with which they were sung. It is one of the delights of these men to sing in unison as they proceed, and the effect is very fine, though, perhaps, to those tutored in music "the sounds that thrilled rocks along" might have appeared somewhat harsh. Such were the features which we admired that morning, and which received an additional lustre from a bright sun and cloudless sky. But when in the afternoon the wind blew high, and the heavens were darkened with clouds, the scene became almost terrific; the waves arose, and it required the fullest confidence in the skill and experience of our

guide to hush all apprehension, as we observed him make for a projecting point where a small eddy, barely thirty feet in length, presented the only landing place for the canoes. Our paddlers strained every nerve, and it was evident that all were convinced that nothing short of the utmost exertion on their part could urge the light canoe onwards against the force of the stream; at last, having, by strong and quickly repeated strokes of the paddle, reached the eddy, one of the men immediately jumped into the stream to stop the frail bark, and prevent it from being dashed against the shore; two men were scarcely able to keep the canoe in its place, as its bow touched the rocks while the stern was still in the rapid. She was quickly unloaded, and raised from the waters, and while the men were engaged in transporting the baggage across, we stopped on the rock to watch the progress of the other canoes, which were conducted with equal skill to the landing place. In contemplating this scene the interest was heightened by the recollection that perhaps no other country presents such splendid and wild features as those that we were then beholding.

In the evening we were visited by a few Chippewas, who came to exchange wild rice for ammunition. They had heard of our visit to Pembina, and had prepared themselves to welcome us. In the course of the day we observed hung up, near the door of a cabin, a bear's snout, which, we were told, was put up, according to the Chippewa custom, as a sort of trophy. We stopped to procure some of the meat, but were informed, that although the animal had been killed only on the preceding day, still it had been all consumed, fresh meat being a rare treat to those that inhabit the banks of this river. Indeed, their game appears to be restricted almost exclusively to a few

bears; moose are seldom found so far south; beaver has become scarce; the country is too wet for deer; and the absence of prairies restricts the buffalo from roving in that direction. The principal subsistence of these Indians, and perhaps of the greater part of the Chippewa nation, is fish and wild rice, of which they collect a great quantity in their numerous marshes, lakes, &c. In the course of this day we observed signs of an igneous action upon some of the rocks; we had already remarked the phenomenon on one or more occasion, but the characters were indistinct; whereas, at one of the portages passed on the 22d of August, the semi-vitrification at the surface of the fragment of a rock found there, appeared more distinct. The general character of the country was still, however, a gneiss and granite, which offered many instructive views of veins of the latter rock shooting through the gneiss; they were judged to be, for the most part, of contemporaneous formation.

The river, as we proceeded, lost altogether the usual characters of a stream; it appeared to be a series of lakes of from one hundred yards to three or four miles in diameter, which were united by rapids. These lakes were encompassed by an iron-bound coast, which the current had indented into bays. A difference of level of several feet, separated these lakes, and gave rise to the rapids; in one case where the portage did not exceed fifteen yards in length, there was a fall of six feet. In these small lakes numerous islands are seen, all resting upon a rocky foundation. On the 23d, after proceeding eight miles, we arrived at the falls, called by the Chippewas Awâk'ân'ê Pâw'êtik, which has been translated "Slave Fall." It is related that a slave of the Chippewas, having escaped from his master, was travelling down the river with all possible speed in a

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SLAWE FALLS ON WINNEPEEK RIVER

canoe, and that being very closely pursued, he, either accidentally or intentionally, it is not known which, suffered his canoe to approach so close to the fall, that it was carried down by the torrent, and never afterwards seen. The river at this place is about eighty yards wide, and the fall, in the course of one hundred yards, is computed at twenty feet. At the upper part of it there is a fine cascade, below which the rapids continue for a short distance, presenting a beautiful landscape. This was sketched by Mr. Seymour, and is represented in plate 9. Notwithstanding the real beauty of this spot, we experienced some disappointment. It had been represented to us as the finest on the river, and finding it inferior in wildness and effect to that of "the moving waters," the pleasure which it would otherwise have afforded was checked.

The navigation of this stream is frequently attended with fatal accidents, and the number of wooden crosses which we observed at some of the rapids, are the brief mementos erected by the survivors, to the memory of the shipwrecked voyagers; they form, as it were, beacons which point out the dangers of the stream. These accidents are generally occasioned by the breaking of the tow-line. The only chance of escape which the canoe-men have, in such cases, if they be not too close to the rapid, is to throw themselves into the stream, and endeavour to swim to one of the eddies, which fortunately are very numerous. We were told of a canoe that was lost at Slave falls by the breaking of the tow-line; the men who were in it had sufficient presence of mind to abandon the canoe; they were saved, while the bark was shattered in its way down the stream, and lost in the rapid; its cargo was picked up at some distance below. This fall is about eighty miles above Fort Alexander. It is probable that this, as well as the

other rapids of the river, is at times much finer than it was when we saw it, for the stream was considered low. Its depth varied much; in the lakes it was sometimes eight, ten, or twenty feet deep, while at the rapids the rock was almost bare. From the water-marks observed on the banks, it appears that, in times of flood, the surface is elevated from five to nine feet, (according to the breadth of the river,) above the level at which we saw it.

Two and a half miles above this fall we reached another, which, for beauty, is second only to the lower falls. It is formed by two chains of rocks stretching across the stream; the upper one occasions a cascade of about ten feet, and the lower one of fifteen; the length of the falls, including all the rapids, is about two hundred yards; the breadth of the stream about one hundred and fifty. The lower sheet of water is divided into three parts by two islands, and the effect is quite picturesque; the foam produced by these two falls, exceeds that observed at any other, and imparts to the river, for a certain distance, a white, milky aspect. Mr. Seymour's view of this fall, which we have called the Upper Falls of the Winnepeek, was not taken at a favourable spot, as the rocky nature of the bank prevented him from landing at a place from which an advantageous view of both the falls could be obtained. The Bois brulés call this the fall of the "petite pointe de Bois." A short distance above this, another, called Jack's fall was seen, which was also very fine. On the 23d we passed six portages and one towing place. The distance travelled was thirty-two miles, and on the first twenty, the fall in the river could not have been less than one hundred and fifty feet.

After passing Jack's falls, a great change in the appearance of the river was observed, and was distinctly traced to a difference in the nature of the rock. The granite and

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UPPER FALLS OF WINNIPEEK RIVER.

sienite were replaced by a slate, which appeared to vary from a mica to a clay-slate, presenting chiefly the characters of the latter. It is very distinctly stratified. The strata are nearly vertical. Its junction with the granite was observed in many places; the slate was superposed. The hills which we had observed above Bonnet Lake, did not continue after the slate had made its appearance. A corresponding change in the features of the stream is observed. The river expands considerably, being in some places several miles wide; it includes a great number of islands, all of which have a solid, rocky foundation. The colour of the rock is of a deep blue or black, imparting the same hue to the water. The river is not deep; its current is swift, especially near the islands, but it is free from ripples; we observed none of the foaming rapids which characterize the lower part of the stream. The islands, which in some places are countless, are generally small, and of a form nearly square; from the vertical stratification of the rock their banks are perpendicular; they generally rise from ten to twenty feet above the level of the water. Their surface is covered with a thick growth of trees, which are, for the most part, however, small. They consist of a dwarf species of pitch-pine, called by the Canadians, cypress; of the spruce, juniper, tamarack, &c.; the white birch becomes more abundant; the undergrowth is very luxuriant. The soil appears much better than that on the granite. In some parts the rock appears covered with a ferruginous incrustation, produced probably by the decomposition of iron pyrites which abounds in it.

A large loon flew by in the afternoon; its screamings which had of late been frequent are, by many, considered as sure indications of the approach of stormy weather; we heard them frequently, but had no opportunity of forming

a conclusive opinion as to the degree of importance to be attached to this prognostic. As far as one instance of successful prediction proves the truth of this sign, the rain, which fell during the night, confirmed the preconceived opinion of those who had asserted its universality. The difference in the rocks did not continue long, for, after having travelled about fifteen miles on the 24th of August, the slate ceased and was replaced by granite, which soon passed into a decided sienite, producing a wilder and more uninhabitable country than any we had as yet seen; the sienite rises, apparently in great confusion, in steep masses which are rounded at their summit; they are covered with moss, and support but a very thin growth of scrubby pines on their surface. The country cannot be called beautiful, though it is certainly picturesque; the broad sheet of water, with its rapid current, is the only fine feature which it presents. This place affords no means of sustenance either to brutes or men. We accordingly observed few, if any, signs of animals. On the whole of Winnepeek river we saw but three trophies indicating the capture of large game; one of these consisted of the horns of a reindeer, they were not of full size, the animal having been killed while they were in the velvet. We have made no mention of the tributaries which Winnepeek river receives, because we consider them as the mere outlets of small lakes situated near our route; from the information which we have received from those experienced in the characters of this region, and which our own observation fully confirms, as far as we have had an opportunity of judging, the whole of the country may be considered as an immense lake, interspersed with innumerable barren and rocky islands, which were, probably, at some epocha of comparatively recent date, covered with water. This, which was

kept up to a level far superior to that to which it now attains, by barriers which we shall not attempt to trace, has broken its bounds, and the country has been very extensively drained. Whether this operation is still continued to this day, can be but a matter of conjecture; we see, however, nothing that makes it either impossible or even improbable. That at one time the Mississippi was one of the great outlets, appears to us equally probable; and that the innumerable boulders which cover its valley, and which are analogous in character to the rocks which we have observed *in situ* on the Winnepeek and elsewhere, have been derived from the great convulsions to which we allude, appears to us equally apparent. We are not prepared to enter into any discussion as to the manner in which these boulders have been dispersed; we profess ourselves as little satisfied as any geologists can be, with the various theories which have been suggested in Europe to account for the boulders of the Jura, or for those which cover the north of Germany, and which are probably analogous to the rocks observed, in place, in the Scandinavian peninsula. We are not prepared to admit that the boulders of the state of Ohio have been projected by a subterraneous explosion, or have been washed by the mere force of the stream, or floated down upon masses of ice, &c. &c.; but we cannot resist the conclusion of our senses, that they have not always lain where we now find them, that they have been removed from their original site, that every thing makes it probable that they were formerly connected with the primitive formations of the St. Peter, the Winnepeek, the Lake of the Woods, &c. Thus far we think ourselves warranted to proceed from observations. The rest must be a matter of speculation, and we are not disposed to indulge in it. We shall therefore restrict ourselves to the follow-

ing conclusions. 1. That the whole of the country between Lake Superior and Lake Winnepeek was formerly covered with water to a much greater height than it is at present. 2. That this inland sea was bounded by barriers which were broken, at a time probably posterior to the deposition of the secondary limestone of Ohio; wherefore the fragments, which result from this great convulsion of nature, are found resting upon those secondary formations. 3. That this process of draining was carried on at first, partly, at least, through the valley of the Mississippi. 4. That it is not improbable that this draining is still continued. 5. That if this be the case, it is partially through the valley of the Mississippi, but chiefly through Nelson's river.

Most of the streams which are mentioned by the guides as rivers emptying into the Winnepeek, are upon closer inquiry found to be mere branches of the same river that divide off at distances of twenty or thirty miles, and which again unite with the main stream, or, as we would deem it more probable, they are parts of the general system of lakes which cover the whole country. One of these branches is termed the English river, because it has been ascended by the Hudson's Bay Company's traders to its sources, which interlock with those of Albany river; it offers a direct communication between Lake Winnepeek and Albany Factory, of James' Bay.

On the 24th, we passed two portages and three lightening places. Our canoe-men experienced great satisfaction at the sight of a canoe, which passed us in the middle of the day, from Montreal. There was on board a gentleman, bearer of despatches, who had left London on the 23d of May, having passed in the space of three months from the extreme of civilisation and population to

one of the wildest and most deserted spots on the surface of the earth. The accidental meeting in such a solitude with one who belongs to a civilized country, and who speaks the same language, is delightful; we forget that we meet with a stranger, with one of a different nation; we are in such cases almost inclined to greet an utter stranger as though he were a friend from whom we had been long separated. The hurry with which both parties were travelling prevented us, however, from delaying any time; and with a sincere welcome, and mutual good wishes for the success of our respective journeys, we passed, and soon lost sight of each other's canoes.

On the 25th of August we proceeded and reached the head of Winnepeek river. Our paddlers had a comparatively easy task all day except at one place, where they attempted to paddle up the stream instead of resorting to the towing line as is usual. This place, called the "Grandes Dalles," presents the most rapid current against which we have ever seen a canoe paddled. It is a narrow strait, not exceeding forty yards in breadth; it is bounded on both sides by perpendicular precipices of granite; great exertions are required on the part of the canoe-men in order to ascend this, and one of the canoes, after two unavailing attempts to stem the current with paddles, was towed up with a line. A short distance above this we passed a cross at a place called the "Petites Dalles." This spot has acquired a melancholy celebrity as having been the scene of the murder of one Owen Keveney, one of the men employed by the Hudson's Bay Company or the colony. His death was almost the only crime committed in the Indian territories that was punished. After a protracted trial, his murderer, de Reinhard, was convicted and executed. We heard all the particulars of the transaction

with some interest, from the circumstance that Desmarais had acted as guide to the canoe in which the unfortunate Keveney was travelling, and that he was one of the principal witnesses, and had even been indicted as a party to the crime. Much stress was laid in the course of the trial upon the question whether this spot was included in the province of Upper Canada, and it became necessary to examine this point; after very full testimony had been received from the best geographers in the country, it was decided that the limits of Canada did not extend that far.

While we were resting upon one of the islands, an Indian came up in his canoe with his family and supplied us with fresh sturgeon and with dried huckleberries. These are said to be cured in a manner which will preserve them for two or three years; they are first dried in the sun, then smoked by placing them upon a net over a slow fire until the skin bursts, and the juice begins to flow; after which they are again exposed to the sun until they become dry. The smoky taste which they acquire improves their flavour.

After passing through a small lake, rendered very rough by a stormy wind, we reached Rat portage, which is about one hundred yards long, we crossed it and encamped on the shore of the Lake of the Woods. We are informed that there is a communication by a fine fall from the lake into the river, and that it is to avoid this fall that the portage is made across an island. We did not see the fall. We had scarcely reached the eastern end of the portage when a heavy rain commenced, to which we remained exposed during the greater part of the afternoon.

Rat portage has become a point of some importance, as it appears probable that the north-westernmost point of the boundary line of the United States will be at or near

its extremity, according to the tenour of the seventh article of the treaty of Ghent, which provides that the commissioners appointed to regulate the boundary line shall fix and determine that part of the line which extends from the water communication between Lake Huron and Lake Superior to the most north-western point of the Lake of the Woods; and which further enjoins that they shall particularize the latitude and longitude of that point.

The determination of the north-westernmost point of a lake which presents a great number of bays and indentations, will be an object of difficult accomplishment; we had heard from the Indians that the boundary line had been run to Rat portage, and were therefore anxious to find it out. We saw evidences of the commissioners having been there but a short time previously, but no land marks could be discovered. We subsequently, however, met John Bigsby, M. D., surgeon in his Britannic Majesty's service, a gentleman who is attached to the boundary line commission, and who has taken advantage of the situation which he fills, to investigate very fully and extensively the geology of British North America. We have had frequent communications with Dr. Bigsby concerning the geology of that part of the country which lies between the Lake of the Woods and the Sault de Ste. Marie; and are pleased to find that our observations correspond well with his. Our specimens were likewise very concordant; with this exception, however, that Dr. Bigsby's stay in the country having been much longer than ours, he was enabled to visit many more places than we were. His investigations were therefore more full and more minute, and his specimens selected with more care. In travelling as rapidly as we did, we were obliged to confine ourselves to the observation of the general features of the country,

without having time to search for localities of minerals. In this respect Dr. Bigsby was more fortunate; he has kindly communicated several to us, and in mentioning them we shall always state to whom we are indebted for them. With this acknowledgment we beg leave to offer to that gentleman our thanks for the liberal access he afforded us to his valuable collections, as well as for the information which he freely and kindly imparted.

From Dr. Bigsby we heard that the line had not yet been run; the commissioners having hitherto been engaged in making separate surveys west of Lake Superior.

It appears that Rat portage is about nine or ten miles from the northernmost extremity of the lake. The lake is elevated about ten or twelve feet above Winnepeek river, at the point where we left it. Its latitude, according to M'Kenzie is 49° 37′ and its longitude 94¼° west. Dr. Bigsby set it in latitude 49° 44′ 22″, probably from an observation of Mr. Thompson's. Previous to our arrival at Rat portage, we observed that the rocks had again changed to a slate, of which the stratification was very distinctly directed from east-north-east to west-south-west. The inclination was nearly a vertical one; the colour of the slate is a dark green; it is very decidedly a micaceous slate, at least on Rat portage. This produces the same feature which we had observed in Winnepeek river, above Jack's fall, but which becomes more distinct in the Lake of the Woods. The stream expands and includes an immense number of islands. It is to this circumstance that the lake owes its picturesque appearance and its name, as every one of these islands is covered with trees. The aspect of the lake differs essentially from any other that we had previously seen. At Rat portage our view was limited by an island which nearly closes the bay at which the

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portage terminates; but after we had passed that island we found ourselves upon a smooth sheet of water, interspersed with numberless islands, which break the uniformity of the water scenery. Few of these islands are large; all rest upon solid rock, and are covered with small trees, chiefly pine, spruce, hazel, willow, cherry, &c. besides vast quantities of bushes, bearing berries. The prickly pear abounds in these islands. The rocky shores are partly concealed by the moss and lichen which cover their surface, and by the grass and bushes which grow out from their deep crevices. In this respect the rocks in the lake differ from those in the river, as the latter are always bare, to a certain elevation, which indicates that of the floods that occasionally swell it; the dark lines, which are seen running horizontally along the shore, point out the height of the various floods which have at different times occurred.

The weather was so unfavourable during our stay at the portage, as to prevent us from taking any observation. It having cleared up at night, we proceeded at two A. M. with a fine moonlight. At one of the islands, (Cosse's,) while we stopped for breakfast, Mr. Seymour sketched the scenery of the lake, plate 11.

The Lake of the Woods has been described to us as being about three hundred miles in circumference. Its shores are very much indented by bays, in which an immense quantity of wild rice is annually collected. Our passage through the lake, which was nearly in a diagonal direction, was effected in a time very little exceeding two days. The number of islands which we saw was immense; at one time, looking merely before us, we could count upwards of fifty in sight. All are on solid rock, except one, near the

mouth of Rainy-lake river, which is a sand-bar, probably formed by an accumulation of sand carried down by the river. This was the more remarkable, as it was the first sand-bar observed since we entered Winnepeek river. The Indians had, with their usual attention to the features of the country, remarked this bar, and they called the lake Pékwâ-ôngâ Osâgâágân, which means "the lake of the island of sand-mounds," owing to the mounds formed on this bar by the accumulation of the sand by the winds. It is true that the lake is also sometimes called Mêtékôkâ Osagaagan, which signifies Lake of the Woods, but this is supposed to be a modern appellation, translated from the name which the French traders gave it when they first saw it. The distance which we travelled in the lake was about eighty miles, which probably was its longest diameter. Observations were made to determine its position; they gave for the situation of Cosse's Island, distant sixteen miles from Rat Portage, 49° 36′ 42″ north; for that of Red-rock Island, passed on the 27th of August, 49° 11′ 33″; for Sandy Island 48° 56′ 4″ north; and finally, the entrance of Rainy-lake river was determined to be in latitude 48° 53′ 40″ north, and longitude 94° 21′ 15″ west. The variation of the compass in the lake was 11° 1′ 25″ east.

With a view to avoid a circuitous navigation round a projecting peninsula, it is usual for voyagers to make a small portage over this point. It did not exceed one hundred yards at the time we crossed it. Our guide says that it is often under water, so that the canoes pass without difficulty. This requires a rise of about five or six feet above the level of the waters at that time. We found in great abundance the plant which bears the wild-rice; it was quite ripe at that season. The Indians collect the grain in great plenty, considering it as one of their best articles of food, and that

upon which they can place the greatest reliance. We have been led to make some inquiry as to the extent of the region in which wild-rice grows, and we find it to be very great. Mackenzie says, that wild-rice is hardly seen, or does not come to maturity, north of the fiftieth degree of latitude, and, we believe that it does not grow west of the Mississippi below the mouth of the Missouri, or on any part of this river. Its western extremities are probably about the sources of the St. Peter; it ranges in latitude from the 31st to the 50th degree, and in longitude from the Atlantic to the 97th degree; for we were informed, by Gen. Brown, that it had been observed on Black river in the state of New York; we know that it exists on the Delaware above and below Philadelphia; and it appears that it is also found in the south-east corner of South Carolina, at a place called from this circumstance, the "Wild-oats Marsh." Gen. Macomb, who has seen this marsh, states the wild-oats to be the same as the wild-rice of our N. W. territory. Doubtless it is to this plant that Hakluyt alludes when he states that in "Virginia there is a kind of reed which beareth a seed almost like unto our rice or wheat and being boiled is good meal." This grain, which probably resembles oats more than rice in its appearance, was fit for harvest when we were in the Lake of the Woods, and we were told that the Indians were dispersed in all the small bays collecting it; we ate of it frequently on the journey, and found it palatable, though inferior to domestic rice; it is probable that the grain which we had was not well separated from the hull, and from this circumstance was not as good as that which is prepared with more care.

Although most of the islands in the lake are formed of slaty rock, yet some, as for instance, the Red-rock island, on which observations were made on the 27th of August, are

composed of granite; in this case the feldspar is of a reddish appearance, and imparts to the granite the colour from which the name of the island was derived. We have frequently observed in the islands which we visited that the north-eastern extremity was bounded with boulders, the average diameter of which might be about two feet. Though these sometimes extend all round the island, still it is more usual to observe them only at the north-eastern point, seeming to indicate that they were carried down from that quarter. The direction of the strata of mica-slate appears to vary from north 60° to north 80° east. The angle with the horizon varies from 65° or 70° to the perpendicular. The rock is penetrated in some places with iron pyrites; veins of quartz also appear occasionally through the mass. We saw no limestone, but Dr. Bigsby informed us that he had observed some on the shore of the lake. It is probable that we had in sight during our course through the lake, at least 200 islands, whence an idea may be formed of the immense number which it includes. Towards the south-east there is a space without islands, and this gives rise to what is termed the "Grand traverse," which is, however, only ten miles long. From the number of islands, when a slight wind blows upon the lake, it soon raises a high but short wave, which is very dangerous to bark canoes; hence the least wind will sometimes occasion a considerable delay in the journey. Desmarais was once encamped eleven days without being able to cross those ten miles; and he has heard of canoes being detained on the adjoining islands for twenty-two days. We were fortunate, as the wind which had blown the preceding day had lulled, and we passed the *traverse* without difficulty. We met in it a canoe with three men who were coming from Rainy lake; they had been detained twenty-four hours by the wind.

As we approached the south-east extremity of the lake, an arm of considerable extent, running in a southerly direction, appeared on our right; it is through this that the connection with Red river, by means of Reed-grass river, is made.

From the observations made on Red-rock and the Sand-bar islands, it appears that the 49th parallel of latitude passes through this traverse. Among the animals seen by Mr. Say, were two kinds of gulls, one of which was probably the Herring-gull, Larus argenteus, young; also a number of pelicans, and a few ducks; swans, it is said, do not exist on this lake; the Testudo geographica was also seen, as well as a soft-shelled turtle, of which the species could not be determined, the lower shell alone being visible. Catesby's spotted frog was found to be abundant as far as we travelled.

We saw on the Lake of the Woods but few Indians, probably not more than twenty altogether, this being the season when they are dispersed. On one of the islands we observed a recent grave, over which a pole was supported by means of stones; it was bared of its bark, and rings of red paint had been described upon it; its top was bushy and a wooden spoon was suspended from it.

We entered Rainy-lake river on the morning of the 28th of August, and reached its head early on the 31st. The length of this stream is about one hundred miles. Its breadth at its mouth is about four hundred yards; it becomes narrower above; its average breadth is three hundred yards; its current is rapid and uniform; there are very few obstructions to the navigation, there being but two places at which canoes are lightened and towed up. The longest of these is about one mile.

At its mouth the banks of this stream are low and marshy;

beyond this they rise somewhat, but present few hills; the river runs in many places over a pebbly bed. The country assumes a more smiling appearance, which led us to anticipate the meeting with limestone rocks; we saw none along the river, but some precipices, seen at a distance, were supposed from their horizontal stratification to be composed of limestone. On the river the rocks seldom appear in place; where we saw them they were principally mica-slate, sometimes, however, sienite. Dr. Bigsby found staurotide in the slate of this river.

The country is much drier; there are fine pieces of meadow land; the grass is of a pleasanter, livelier green; the vegetation more luxuriant; the white maple is seen; the birch attains a larger size. We observed here, however, as we had for a long time past, a total absence of walnut, hickory, and beach. The poplar is very abundant on Rainy river.

Among the animals which are occasionally seen here are the bear, otter, wolverine, carcajou, moose, squirrel, wolf, weasel, beaver, muskrat, fox, &c. The martin, and fisher are very abundant. The principal fish in the river is the sturgeon.

Among the objects which chiefly attracted our notice, were the interesting ephemera which we had seen on Winnepeek river. They became so abundant on Rainy river towards sunset, that they presented the appearance of a snow storm. They continued for some time, until they were driven by the wind into a small tributary valley where they formed white clouds, beautifully relieved against the dark green of the forest, deepened in its shade by the approach of night. The ensuing morning their dead bodies were seen floating on the stream, and drifted by the wind into small coves near the shore. From their great

abundance, Mr. Say was led to believe that this short-lived insect never witnesses a rising sun, but that after performing, in a short time, all the duties assigned to it in its perfect state, it deposits its eggs and expires in the night, a few hours after it has been evolved from the chrysalis. The next evening the ephemera were again seen very abundantly, but it was evident that this was a new swarm, and not part of that previously observed.

The mosquetoes, which had not been seen for some time past, again made their appearance while we were on Rainy river; the weather, which was warm and moist, contributed to increase their numbers. Although we experienced much rain while on this river, and on the lake from which it flows, we have not been able to discover that the climate is more damp there than elsewhere; the name which they bear may have been, therefore, derived from an accidental fall of rain experienced there by the first white visiters, or it may be derived from the colour of their waters, which has much of the appearance of rain water, and which differs greatly from the limpid character of Winnepeek river.

Rainy-lake river receives but few tributaries. We shall mention only the River of Rapids, Pine river, Black river, and the Grand and Little Fork.

The first of these is so called from the fine rapids which it presents immediately above its mouth; it is said to take its rise in lakes and swamps; its course is about eighty miles long; it enters from the left bank.

Pine river, which flows from the north, is about thirty yards wide at its mouth.

Black river is a small tributary from the south-east.

The Grand Fork, which enters from the left bank, is the largest tributary of the river, and probably contains as

much water as the main stream above their confluence. It rises near a small lake called by the name of Lake Winnepeek, and which we have distinguished from that previously mentioned, by the designation of *Little* Winnepeek Lake; it is in the vicinity of Red Lake. Mr. Davenport, one of the agents of the American Fur Company, represented this fork as being one hundred leagues long, very rapid, and not well supplied with water; it has two short portages; it passes through a small lake called *Sachawgan* Lake; from this there is a long portage, (ten *pauses,)* to Little Lake, which has an outlet half a mile long into Little Winnepeek Lake. The whole distance may be ascended in eight or nine days by loaded canoes. A trade has been carried on by the American Fur Company, between Rainy Lake and Fond du Lac, by means of the Grand Fork of Rainy river, Little Lake Winnepeek, the Mississippi, Sandy Lake, Savannah river, and the river St. Louis.

The Little Fork which enters above the Grand Fork, is a wide stream, but it is unimportant, as it does not extend far into the country, and as it furnishes no medium of communication with other lakes or streams.

We saw but few islands in Rainy river, and these were generally small. We occasionally observed stakes which had been used by the boundary line commissioners, to determine the breadth of the river in several places.

During this part of our journey our provisions were not so good as they had previously been. Until we reached Lake Travers, we had depended chiefly upon the salt pork, &c. which we carried along with us, and upon the biscuit which was prepared for our party at Fort St. Anthony. From Lake Travers to Pembina, we had much fresh buffalo and some dried meat. But after leaving Fort Douglas,

we lived altogether upon the jerked buffalo and pemmican which we had purchased. These had not been well prepared, and a large portion was found to be in a very bad condition. This, and the immense quantity eaten by our Engagés, whose appetite far exceeded any thing that we had ever witnessed, soon reduced our stock. The private stores of the officers and gentlemen's mess, such as tea, sugar, &c. were so nearly expended as to require that they should be used in a sparing manner. We therefore resorted to a number of wild plants, of which infusions were made and tried as substitutes for the imported tea; and although to some of the party these appeared good, yet by the greater part the change was not relished. Among the plants which we used were the Ledum latifolium of Pursh, the Stachys anisatus, and the Gaultheria procumbens of Nuttall.

Being informed that at the head of Rainy river there were two settlements, one on the north shore, belonging to the Hudson's Bay Company, and the other on the south, kept up by the American Fur Company, we stopped at the latter, but found it destitute of provisions, and of the articles required for the repair of our canoes. Notwithstanding, therefore, the polite reception of the superintendant, Mr. Davenport, we crossed over to the north shore, where Mr. M'Gillivray gave us the same hospitable treatment which we had received at the other trading posts of the Hudson's Bay Company. We remained at this place two days, to repair our canoes, which had suffered from the rapids in Winnepeek river. One of them being very heavy, and in bad order, was broken up, and its materials used to repair the others.

At Rainy Lake we met with a man, whose interesting adventures deserve to be made known to the public; of

these we regret that it is not in our power to give more than a very brief and imperfect outline. We had heard at various places of a citizen of the United States, who had been at an early age taken prisoner by a party of Indians, and who, having been educated among them, had acquired their language, habits, and manners, to the exclusion of those of his country. While at the Red river settlement, we were informed that he had been assaulted by an Indian and severely, some added mortally, wounded. On our arrival at Rainy Lake Fort, Mr. M'Gillivray requested Mr. Say to visit this man and examine his wound; Mr. Say found John Tanner, for such was his name, in a neat European tent, resting on a good comfortable bed, with his two daughters beside him. On inspecting the wound it was found that the ball had passed through the right arm above the elbow, and thence through the breast. The assault having been made about forty days previous, the breast had healed, and the bones of the arm had united perfectly and properly; but the wound in the arm was still open, though apparently in an improving condition; the patient was able to walk about.

At the time that the shot was fired, Tanner was on his way to the United States with his family; this had interrupted his voyage. Feeling himself better, but still unable to travel alone, he applied to Major Long for a passage in our canoes for himself and his daughters; this request was granted. He removed his tent from the enclosure within the British pickets to our camp; all his preparations were made, and the poor man's heart was light and happy at the idea of resuming his journey in such company as secured him against apprehensions of an attack, when his happiness met with a terrible and unexpected check. We had appointed to depart on the morning of

the 3d of September; the preceding evening, his daughters asked and obtained his consent to go to the fort to see an old half-breed Indian woman from whom they had experienced much kindness. They were seen going into the fort, but did not return; the father becoming uneasy went in search of them, but could obtain no information concerning their fate; he applied to Major Long, who visited Mr. M'Gillivray with Mr. Say, and stated to him the circumstance, desiring that he would use his influence and authority to cause the children to be restored to their parent. The efforts of this gentleman were, however, unavailing. The children were not found; and at the time that we left the fort, it was not known what had become of them. Tanner was placed in a most distressing dilemma; he had re-entered the Indian country but a short time before for the mere purpose of taking his daughters to Mackinaw; if he returned without them, the object of his voyage would be frustrated, and the hopes of ever again seeing his children would be rendered very faint. On the other hand, if he remained in the country without any one to attend him in his wounded and infirm condition, his situation would be very difficult. The Indian who had assaulted him was supposed to be lurking in the neighbourhood, and would probably renew his attempt; at any rate, he could scarcely hope to find an opportunity of returning to the United States for a long while. Under all these circumstances he determined to persist in his former intention; and in this he was strongly encouraged by the assurances given to him by Dr M'Laughlin,* a gentleman who had proved himself a warm

* Dr. John M'Laughlin was formerly a partner in the North-west Company, and after the consolidation of the two societies he obtained

friend of his, and who had just resumed the superintendance of the fort. This gentleman assured him that all his efforts would be used to discover the place where his daughters were, and that he would rescue and protect them until the ensuing spring, when Tanner expected to return to Rainy Lake in search of them. After having travelled with us a few miles on the 3d of September, his pain was so much aggravated, and his arm swollen, by the motion of the canoe, that he found himself unable to proceed; we landed him, and placed him under the care of a dependant on the fort whom we saw engaged in fishing. It was evident that Tanner's grief at being obliged to stop was much mitigated by the hope of being able personally to renew his search after his daughters. Those who appeared unfriendly to Tanner at the fort, endeavoured to impress upon his mind the belief that the girls had eloped from him with a view to return to their mother who was on the Lake of the Woods; but the father replied that the uniform attachment which they had always manifested to him, as well as their ready compliance with his wish that they should proceed with us, must ever prevent his harbouring such an idea; he thought, and probably with good cause, that his daughters had been concealed by some of the half-breeds or dependants on the fort; their age, which was about fourteen or fifteen, their comely appearance and

a share in the Hudson's Bay Company. His usual residence was at Rainy Lake; on our arrival there he was absent, having gone to the annual meeting of the partners at York Factory. He returned on the 1st of September. His attentions to us during the short time that we saw him were of the most flattering kind, and evinced a generous disposition; they could be compared only to those of Mr. Mackenzie. We have met with no persons who have in a short time acquired so great a claim to our respect and gratitude as these two gentlemen.

engaging manners, were such as to warrant the apprehensions of their anxious parent. If this was the case, we doubt not that Dr. M'Laughlin's exertions will have led to their discovery.

The hope which we had entertained of having Tanner for a fellow traveller during the rest of the journey, as well as the fear of increasing his pain by too much conversation, prevented Mr. Say from securing a complete history of his life, but the following is believed to be accurate:—

John Tanner was the son of a clergyman, who removed with his family to the banks of the Ohio, near the mouth of the Miami river, some time previous to the year 1790. He had been settled there but about ten days when apprehensions were entertained of an attack from a party of Indians. The unsettled state of that part of the country, at the time, exposed its scattered inhabitants to frequent incursions from their savage neighbours. Tanner was then about nine years of age; notwithstanding the prohibition of his father, he had wandered to a short distance from the house, and had just filled his hat with walnuts, picked from a neighbouring tree, when he was seized upon by a party of Indians, who by their threats forced him to silence: they carried him off. This party was commanded, it is said, by an Indian who resided near Saganaw, and whose wife had lately lost her son. Bereft of her only child, the mother appeared inconsolable, and finally begged that her husband would make a prisoner of one, about the same age, to whom she might transfer all the affection which she had borne to her own offspring. With this view the Indian had armed a party of his friends, proceeded down towards the settlements, found this child, carried him off, and returned with him to his wife, who was delighted on be-

holding a boy so nearly of the age of that which she had lost.

By these Indians young Tanner was treated with kindness; he rose to manhood, became distinguished as a brave man and a hunter. From circumstances which we have not ascertained, his adopted parents, who belonged to the Saganaw tribe of the Ottawa nation, removed to a more western country; the man died; his wife became the leader of a small party that resided occasionally on the Lake of the Woods, or on Red river, or the Assiniboin. Tanner was offered the situation of chief, which he wisely declined, judging that his white origin would make him an object of suspicion. He appeared satisfied with his success as a hunter, and had no further ambition. We were told by those who had long known him, that although he had acquired many of the characteristics of Indians, still he had some peculiarities which marked him as one of a different origin. He had never been seen to taste of ardent spirits, or to smoke a pipe. Instead of purchasing trifles and gewgaws as is customary with Indians, he devoted the produce of his hunts, which were always successful, to the acquisition of articles of clothing useful to himself, to his adopted mother, or to her relations. In this state he appears to have lived perfectly happy, respected and esteemed by all his fellow hunters. In the year 1816, he rendered an important service to Lord Selkirk's settlement, by guiding a party of new settlers, who were under the direction of Governor M'Donnell and Captain D'Orsonnen from Rainy Lake to Fort Douglas; this reinforcement arrived at so timely a moment as to make Tanner a great favourite at the settlement. He was pointed out to Lord Selkirk during that nobleman's visit to his colony. His Lordship took great interest in his situation, and by

his exertions, Tanner's family was discovered. His recollections of the scenes of his early youth, though faint at first, gradually brightened. He had forgotten his father's name, or rather it had become confused in his recollection with that of a friend of his family called Taylor, so that this was at first thought to be his name.

Tanner placed in our hands a letter which was written by Lord Selkirk, and which is dated Lexington, Nov. 25, 1817. It was written after a personal interview with Mrs. Taylor, whose account of the family corroborated Tanner's statement in the most important particulars. There were some slight discrepancies, but these were no other than might have been expected from the imperfect recollections of a child of nine years of age, after twenty-six years of estrangement from his country and friends. It is perhaps somewhat singular that he should have totally forgotten a language which he must have undoubtedly spoken with considerable fluency at the time that he was taken prisoner. The following extract from Lord Selkirk's letter, at present in our possession, shows how far his recollections extended.

"The circumstances that Mrs. Taylor mentioned of his family coincide with those which he told me in the north, particularly that he had a brother called *Ned*, and two sisters married previously to his being carried off. Also that his father was a big lusty man, as the young man described him. The only point of difference is, that Mrs. Taylor said that Ned Tanner was older than the boy John, who was carried away, whereas I had understood him to be younger; but as I could converse with John only through an interpreter, such a mistake might easily arise. Mrs. T. also said that old John Tanner had been settled in Kentucky several years before 1790, but that possibly he

might have removed at that date, by the river, from some other part of the state. The young man told me that his father had changed his residence a very short time before he was carried off, and had been settled on the banks of the Ohio only about ten days, when the attack of the Indians took place. He mentioned particularly his having come down the river in a large boat or flat with horses and cattle. He also mentioned, that, at the place where his father lived previous to his removal, there was a brook running in a cavern under ground, where they used to go with a candle to take water," &c.

Through the benevolent and active interference of Lord Selkirk, Tanner was restored to his family, who recognized him and received him well. He had already brought several of his children into the United States, and had three of them at Mackinaw, when, in 1823, he determined to return to the Lake of the Woods for the others. The Indians, it appears, manifested great unwillingness to allow the two young girls to be taken out of the country, and they opposed his endeavours, until finally, with the assistance of Dr. M'Laughlin, he succeeded in removing the children. He appears to have felt but little affection for the mother of his daughters, and wished her to remain in the country; but she, finding her efforts to keep her daughters unavailing, resolved to go with them. They had passed Rainy Lake and were at the Portage de l'Isle, in Bad, (Maligne,) river, when the wife induced an Indian, who was travelling with them, to shoot Tanner. She, it appears, bribed him with the promise of her elder daughter.

The poor man was near falling a victim to the plot; his wife ran away with the Indian, took her daughters with her, and left him alone and wounded; fortunately he was picked up by a canoe going to Rainy Lake; they convey-

ed him there; his daughters joined him, and, as he said, treated him with the utmost kindness. His wife proceeded down the river with her accomplice, who was said to have had a bad name, even among the Indians, previous to this circumstance.

We have endeavoured to acquire some knowledge of the character and principles of a man, whose early impressions must have been completely extirpated by those of the men among whom he spent the greater part of his life. He vowed to be revenged on the Indian who had shot him; heedless of the personal danger which he must incur from another visit to the country, he resolved upon returning to Rainy Lake as soon as he should have regained his strength, in order to pursue and punish his enemy. Any observations which were made to him, on the impropriety of his feelings, only drew from him this answer; "Why did he shoot me? If he wished to kill me, it is my duty to kill him, for he is a bad man." This was uttered in a cold, decisive manner; it was not the result of passion, but of a conviction founded upon a process of reasoning, to which he had been long accustomed. In his intercourse with traders he appears to have been honourable, and this reflects the more credit upon him, as it was at a time, when an active competition between rival traders frequently induced them to stimulate the Indians to frauds which affected their opponents. One instance appears well attested. In a letter, dated Montréal, Nov. 1818, and which was written by Mr. John Allan, it is stated, that "Tanner did not choose to traffic exclusively with any trader, but used to take goods on credit, at the same time, from parties trading in opposition to one another, and on one occasion, brought two parcels of furs to a post of the North-west Company, at the fork of Red river; he employed the

contents of one parcel to pay a debt which he had contracted there, and, having done so, was about to go with his other parcel of furs, to discharge, in like manner, a debt which he had contracted with a neighbouring trader of the Hudson's Bay Company; some opposition to the taking away of his furs was made, by the person in charge of the North-west Company's fort, who endeavoured to prevail on Tanner to sell the whole to him. When persuasion failed, threats were resorted to by the trader, and as Tanner still persisted in doing as he pleased with his own property, a pistol was presented to his breast; on which, pointing to his bare bosom, he undauntedly told the trader to fire, declaring that, although but a stranger and a slave in that country, he would not be so much of a woman as to raise a weapon against any man, and afterwards, through fear, desist from killing him. By this bold conduct he maintained his right to the disposal of his furs, which he immediately applied to the payment of a just debt."

Of his attachment to his children, he gave a strong proof by the long and perilous journey which he undertook to visit his daughters; and the distress which he felt, when they had disappeared, was among the most heart-rending scenes which we have ever witnessed. His language was the natural expression of grief deeply felt. If the abandonment, which he had meditated of his wife, presents him to our consideration in a less deserving light as a husband, it must be borne in mind, in extenuation, that the woman who could, under any circumstances, be induced to plan, and instigate another person to so atrocious a crime as that in which she afterwards shared, could not be an amiable companion, and could probably have no claim upon his affections.

What will be the future destiny of Tanner appears to us very uncertain. We much question whether he can ever be satisfied with sharing in the occupations and comforts of civilized life. We think it more probable that the wandering and irregular habits which he seems to have imbibed from the Indians will soon drive him back from the settlements to his usual haunts in the woods. He was at one time considered, by zealous persons, as a fit instrument for the conversion of Indians to Christianity, but we doubt whether he can ever be brought to feel that deep conviction in the truths of Revelation, which is required to make fit ministers of the gospel. While his strong mind appears to have rejected the superstitions of Indians, it has imbibed a sort of philosophic incredulity, which would make him but a slow and unwilling convert to the purest of faiths.

Tanner was of a disposition naturally stern, which his mode of life and the sentiments of his companions have but increased. He was said, by many, never to have been seen to shed a tear; when he was bereft of his daughters, he wept not; his grief was of too stern a character. But it was evident that the conflict of emotions in his mind, at the time that he was compelled to land from our canoes, overpowered him, and his eyes glistened with a tear which he attempted in vain to shake off.

There is a feature in his character which we have not alluded to, and, as it is honourable to him, we should be loath to omit it. We allude to his warm gratitude for all those who have at various times manifested kindness to him. His affection for his Indian mother, and for her family, was great. Of the late Lord Selkirk he always spoke with much feeling. To Dr. M'Laughlin he appeared sincerely attached. He frequently mentioned the kind sym-

pathy manifested to him by Major Delafield, of the boundary line commission, who would have taken him in his canoe, but that at that time his wounds did not admit of his removal.

Such is the sketch of the life and character of this interesting man, as far as we have been able to collect them from personal interviews with him, from the account of Dr. M'Laughlin and others, who had known him for many years, and especially from the perusal of the documents which he had in his possession, and which fully establish him to be the son of the Rev. John Tanner, late of the neighbourhood of Frankfort, in Kentucky. These documents consist of letters from Lord Selkirk, from Mr. Edward Tanner, and from other persons who interested themselves in his behalf. Tanner had promised to supply us with the particulars of his life and adventures, and with a full account of the manners and habits of the Ottawas and Chippewas, among whom he had resided. His well established character for candour make it an object of much regret that the state of his wounds prevented him from continuing with us. His language, though broken, was intelligible; he had in his intercourse with white men, since 1817, acquired enough of the English language to converse in it, though always with much difficulty.

At Rainy lake fort there is a very fine water fall, surpassed by two or three only of those on Winnepeek river. The whole of the waters of the lake discharge themselves into the river by these falls, the height of which is about twenty-five feet. The beauty of the spot depends much upon the wildness of the rocky scenery, occasioning a foaming or dashing of waves that is very striking. The rock is chiefly sienite, in which we thought we could distinguish a tendency to a stratification directed about north-east, and

inclining about 65 degrees to the south-east. This, however, may have been a local feature. The principal growth about the lake is the pitch pine, white pine, and spruce. The soil is rather light, but in the immediate vicinity of the fort it is excellent; potatoes and wheat are cultivated, together with maize, pease, beans, pumpkins, water and musk melons, &c. &c. The wild strawberry seemed to be more abundant there than elsewhere. Our soldiers were kept busy, while encamped at the fort, in fishing for the pike and fresh-water salmon, which are found in great abundance and excellence at the falls. The Testudo geographica is found there. Among the birds Mr. Say killed the ruby-throated humming bird, black-headed titmouse,* and pileated wood-pecker.† There are remains of beaver dams near to the fort; and it is probable that this was formerly a favourite haunt of this animal, which has been entirely hunted out by the residents on the lake.

We proceeded through Rainy lake, for a distance of about fifty miles, on a general easterly course. We found it to resemble in its characters the Lake of the Woods; it contains many islands, all resting upon a rock which for the most part is a mica-slate, whose strata are directed north 70 degrees east, and nearly vertical; we have in a few places seen granite, sienite, &c. The islands betray a rapid and constant decomposition by the crumbling of the vertical strata, so that we doubt not that the physical characters of the lake, as well as the size and form of the islands, must undergo very striking changes in the lapse of ages. From Rainy lake the voyagers pass into a number of small rivers or narrow channels, separated by portages. Among these rivers they distinguish that of the "New Portage," de la

* Parus atricapillus. † Picus pileatus.

Croix, Maligne or Bad river, &c. Among the lakes are Vermilion, Nâmâkân, or Sturgeon lake, and de la Croix. There can be no doubt that the level of the water changes much, even at this elevated summit, for we find that the routes followed by canoes vary frequently. We are informed that that which we pursued is often so dry as to admit of an easy portage of a mile in the bed of a river which at that time contained sufficient water to float our canoes, even with their heavy loads. As these routes are not all equally long, the shortest and easiest are selected whenever the level of the water admits of their being travelled. In determining the boundary line the commissioners will doubtless take this point into consideration, so as to establish it along those streams which afford an uninterrupted navigation at all seasons. We observed as we advanced that the country became more broken, the hills were higher, the islands rose to a greater height, and the region assumed characters indicating a dividing ridge. A journey of a few days more brought us to the "Portage de la Prairie," one end of which communicates with the waters of Lake Winnepeek, while the stream at the other end flows towards Lake Superior. This was the point to which we had been long anxiously looking, and we experienced much real satisfaction on reaching it. The difficulties which we had experienced within the last days were increased by the badness of the weather. The features of the country became more dreary than ever, and were in no manner relieved by the picturesque effect of the rocks. One afternoon, that of the 6th, we had, it is true, enjoyed great delight from the stillness and soft beauties of Deep river. This stream has a narrow and smooth channel which winds through an alluvial region. Its course is so meandering that our compass frequently ranged through up-

wards of two-thirds of its circumference in the space of half a mile. The scene was such as a painter might have selected to depict a perfect calm of nature; the great depth of the stream, as well as its narrow bed and crooked channel, contribute to impart to it a darker hue than is usually observed in water; and its reflection of the trees and other objects on its banks exceeded in intensity all that we had as yet seen; the beautiful pembina bushes, loaded with their neat little crimson berry, were reflected as though by a mirror; it was about sunset when we ascended this short but highly romantic stream. With the exception of the few individuals that composed our party, not an animated being was in sight; it really seemed as if we had passed beyond the limits of the inhabited world.

Beyond this, we found a small lake, at the upper end of which we encamped; the air was perfumed by the sweet-scented grass, (Holcus odoratus,) which we found here in greater abundance than elsewhere, it had already grown into seed, of which we collected some. At this place, the cold, which had been gradually increasing, became very unpleasant; the dews were still heavy, and on the morning of the 7th we found ice about our encampment. The Portage des Français which we then passed, was a very difficult one; it was about two miles and a quarter long, and was so swampy that it offered great difficulties. Towards the summit level, the portages become longer and more difficult. At the time when the North-west Company carried on an extensive trade by this route, the portages were kept in good repair; the bushes being cut off, the paths well traced, and causeways erected wherever the ground was swampy. The case is otherwise at present; the little travelling along this route has occasioned them to be neglected, and they are in a worse state than if they

had never been attended to, for the decayed timber, arising from the broken causeways which were formerly removed, now produces many dangerous holes. Many accidents occur in the portages, especially to such as carry heavy loads. Not unfrequently one of those that carry the canoes slips, in which case the whole weight falls upon him, and crushes him. An accident of this kind gave rise to the name of Deadman's Lake and portage which we passed on the 6th. Next to this was a lake, called Doré, which we have named Hyodon, from the beautiful fish of that genus, (Hyodon tergissus, Lesueur,) which abounds in it. Beyond this we entered the Thousand lakes, so called from the apparent division of a sheet of water into numberless small lakes, by thousands of small rocky islands. A more gloomy name is that of Cannibal or Wândigò Lake, which is derived from the unnatural deed which was perpetrated in its vicinity. It is said that a party of Indians, belonging to the Oschèkkâmègà Wènènèwâk, or band of the cross-ridge, were once encamped near this lake in the year 1811, and were quite destitute of provisions; they amounted to about forty; their numbers gradually diminished through famine, the survivors feeding upon the bodies of their deceased relations; finally there remained but one woman, who had subsisted upon the corpses of her own husband and children, whom she had killed for this purpose. She was afterwards met by another party of Indians, who, sharing in the common belief, that those who have once fed upon this flesh, always hunger for it, put an end to her existence. The Oschekkamega band, inhabiting a very barren country, are often reduced to cannibalism from necessity, and the frequent recurrence of it has almost deprived them of the abhorrence which men naturally feel for anthropophagy. It was not therefore from horror, but rather from a feeling

of self-preservation, that this woman's life was taken away.

While ascending Bad river, Mr. Say observed on the bank a beautiful little animal, which was soon made out to be a fox, probably of the rare and valuable species called the Cross Fox. The animal was shot at, and wounded, but unfortunately he succeeded in making his escape. From the trace of blood which was left on the rocks, it was judged that he could not have run far, but as the woods were very thick, our hunters failed in discovering him.

Among the plants, none appeared to call for particular notice from Lake de la Croix to the height of land, except the raspberry, which yielded fruit in the greatest abundance and of a very superior quality. The minerals presented but little diversity; in one place, the rock, which is a mica-slate, contains many small nodules of quartz, and probably of garnet, which impart to it a rough appearance, and have caused it to be noted by the voyagers under the name of the "Rocher Grenuilleux." But the crystals of garnet were so small and ill defined, that it was with difficulty they could be made out. The only good crystals which we saw were of tourmaline, in a granitic rock which forms the Island of the Straits, in Little Sturgeon Lake. These were beautiful, about an inch long, and terminated at both ends, but they could not be detached except by blasting, which we had neither the time nor the means to execute. They were of an intense black, the more remarkable, as most of the rocks which we observed in the portages, as we advanced in our journey, were almost free from colouring matter. We frequently found granite, whose mica was of a silvery white, the quartz transparent and colourless, and the feldspar resembling the adularia or moon-

stone. Near to the dividing ridge, many of the portages were extremely swampy.

Although the country is hilly near the summit level, yet the highest ground, between the waters of the Winnepeek and St. Lawrence, is not more than one hundred and fifty feet above the level of the two lakes in which these waters are supposed to take their source. We are induced to consider the country as inclining towards Lake Superior, from which circumstance the water at the north-east extremity of the Portage, is less elevated than that at its south-west end. The length of the portage is but very little more than two and a half miles. We had been told that there is a water communication at this place between the two streams, but we believe that this is not the case. The highest water of the St. Lawrence, which we saw, was in a small pool called Cold Water Lake. This is a basin which is only one hundred and fifty yards long and about twenty wide. Its name is very appropriate, the temperature of its water being much lower than that of the surrounding lakes and streams. It is supplied by a spring issuing from the side of the hill, and which is not more than two hundred yards from the lake. This is one of the finest springs we have ever seen; its temperature, which was only 41° of Fahrenheit's thermometer, is lower than that of any spring which we have examined. The temperature of the lake is about 42°. That of the atmosphere at the time we made the observation was 63°. We saw no rocks in place about the spring, but entertain no doubt that the whole country is granitic.

We reached Cold Water Lake on the morning of the 10th of September, and commenced our journey down the streams which fall into Lake Superior, near Fort William,

which place we reached on the 13th. Our course from the height of land to Lake Superior was through Cold Water, Muddy, and White-fish Lakes, Cats-tail river, Dog river and lake, and the Kamanatekwoya river. There were along this part of the route many portages, and these were both long and difficult. The first day we passed through the several lakes, descended Cats-tail river, and proceeded about fifteen miles down Dog's river, where we with difficulty found an encamping ground. Cats-tail river has a very circuitous course through a valley about three miles wide, which is embanked by hills rising to at least one hundred and fifty feet. The valley partakes of an alluvial character, and consists principally of sand. The stream runs through it, being incased but a small depth below its level. The hills which bound the valley are chiefly granitic; at one place where we passed near to their base, we saw a beautiful pink granite, which extended for about half a mile. It was divided into large masses, showing no signs of stratification. There are no material obstructions to the navigation of the two rivers, so that we proceeded with much speed, until we reached on the 11th the Dog Portage, which divides Dog Lake from the Kamanatekwoya or river of Fort William. In the lake, which may perhaps be considered as a mere expansion of the same stream, which receives two different names above and below that place, we observed a recurrence of granitic islands, similar to those west of the height of land. We were shown, in this lake, an arm of it which extends to the south-west, and which, as we were informed, connects the lake by an uninterrupted water communication with the Thousand lakes, west of the Prairie Portage. This route is shorter than that which we travelled, but is filled with rapids. If this be really the case, and we have reason to believe that

it is so, we draw from it three very interesting conclusions. 1st. That there is an interlockage between the waters of Lakes Superior and Winnepeek. 2d. That the waters at the west end of the Prairie Portage are much more elevated than those at the east end, since there is all the difference of level between Dog Lake and the Thousand lakes, which is represented as considerable, and also all that observed in the western waters, from the Thousand lakes up to the west end of Prairie Portage. There being but an inconsiderable rapid between Cold Water Lake and Dog Lake, we may assume the level of the water in both these lakes to be very nearly the same. The third conclusion is drawn from the fact, that a height of land or dividing hill was observed on the route which we travelled, and that it is known to exist on the Grand Portage route, which connects the De la Croix Lake with Lake Superior, some distance south of Fort William; while in the intermediate route between Dog Lake and the Thousand lakes, no such dividing hill occurs; whence we observe that this does not constitute a dividing ridge, properly speaking, but merely separated and disconnected hills, between which there are probably water communications. We find a confirmation of this opinion in the fact that an uninterrupted water communication exists likewise between Dog Lake and the English river which we have previously noted as entering Winnepeek river above the Slave Falls. A connection also exists between Dog Lake and Nipegon Lake at the head of Nipegon river. From all these facts we are led to the belief, that at the place where a dividing ridge is generally indicated upon maps, there are many uninterrupted water communications between the waters of Lakes Superior and Winnepeek, and James' Bay.

Dog portage receives its name from the figure of a dog

carved upon the hill over which it passes. This figure is nearly obliterated, but from the description probably resembles representations of otters, &c. near Lake Travers; it is supposed to have been executed by a party of Sioux, who had advanced thus far on a warlike excursion; this shows how far they sometimes carry their inroads into their enemies' territory.

On descending Dog portage we found mica-slate *in situ* on the east side of the hill, and this we observed still more distinctly at the next portage, where the sharp lamina of the slate, resembling the blades of cutting instruments, have caused it to receive the name of Knife or Devil portage. Although it was late when our party reached this place, yet we had occasion to observe a junction of the slaty and greenstone rocks. The greenstone underlays the slate, whose strata are directed north fifty degrees west, and incline to the north-east about seventy degrees. There does not appear to be a passage from the one into the other; but a tendency to the formation of both rocks probably existed at one time, whence the mica-slate was deposited immediately after the greenstone, no interval of time occurring between the formation of the two, as appears from the fact that we find patches of the latter enclosed in the inferior strata of the former, and also some portions of mica-slate in the superior part of the greenstone mass; as the latter is not stratified, we could not determine whether the slate lay in parallel superposition, though we have reason to believe that it does. We observed that the masses of greenstone enclosed in the mica-slate lay in a direction parallel to the stratification.

The descent on the east side of the height of land is very rapid, as can easily be observed in passing the portages. On the 12th of September, we travelled thirty-five miles, and the difference of level which we observed in the wa-

ter during that day exceeded two hundred and seventy feet. The splendid water falls which we observed we will not attempt to describe. One of them, however, we cannot pass over without particular mention, as it may probably rank among the finest that are known; from the Indians it has received the beautiful appellation of Falls of Kakâbikkâ, and as no attempt has as yet been made to give it an European name, we hope that its original appellation will be retained as that of Niagara has been. In the Chippewa language Kakabikka signifies the "cleft rock." This fall is remarkable on account of the volume of water which it presents, the great height from which it falls, the picturesque appearance of the rocks which surround it, the wildness of the vegetation that accompanies it, and finally, on account of the very great noise which it produces, and which we believe to be far greater than that of Niagara. It yields to the latter in one respect, however, which is in point of breadth, but in this perhaps it acquires an additional beauty; for the immense breadth of Niagara certainly takes away from the effect which its great height would otherwise produce; while the falls of Kakabikka, restricted by the rocks to a breadth of fifty yards, present a height apparently more imposing. The rock was measured by Lieutenants Scott and Denny, who found the perpendicular pitch to be about one hundred and thirty feet. The edge of the rock is placed obliquely to the bed of the river; its surface is entirely covered, but is probably rough, so that the water is broken before it leaves the rock, and forms an uniformly white and nearly vertical sheet of water descending into the abyss below, where it meets with a rocky bed which produces a considerable spray; the stream continues foaming for a long distance. The hand of art has as yet done nothing to modify the

Design'd by S. Seymour. Pub. by H. C. Carey & I. Lea 1824. Engrav'd by J. Hill.

FALLS OF KAKABEKKA.

appearance of this beautiful spot, so that we saw it in all its wild beauties; no ladders have been erected to facilitate the descent; no trees felled to clear the prospect; we were therefore obliged to satisfy ourselves with that view of it which the rock naturally presents. The finest prospect is one taken at a short distance below, but nearly on the same level with the upper channel of the river. Mr. Seymour's view, Plate 12, is taken from that spot; it presents but a small portion of the fall. The observer situated in the manner of the figure in the plate, can at one glance catch the whole sheet of water; but in order to convey such a view on paper, it would require that the painter should place himself on the lower level of the river, having the whole fall before him. Mr. Seymour could not obtain such a view, as the vertical nature of the cleft in the rock prevents a descent to the bed of the river; we were informed that canoes had sometimes ascended the stream to a small rocky island, situated about two hundred and fifty yards below the fall, but this attempt was not made, as it would have been attended with danger to our canoes, which in our situation were too valuable to be hazarded. The chasm, into which the water falls, is bounded for several miles by bluffs of rocks which rise to a height of upwards of one hundred and fifty feet. They are of a dark colour, that contrasts strongly with the white foam of the waters.

Directly opposite to the place from which we contemplated the fall, there is in the rock a cavity, which, in the superstitious legends of the Indians, is regarded as the residence of the evil spirit. The entrance to this cavity is scarcely large enough to admit a man. About a quarter of a mile below the fall there is a sort of cove in the right bank; it is about three hundred yards in diameter, and bounded

by the steep bluffs on all sides, except in front, where the river passes. The portage road, which is about three quarters of a mile long, terminates at this place; a descent to the level of the water having been made by the North-west Company. After having visited the falls, we stopped in this cove for dinner; we attempted to walk along the edge of the river up to the foot of the fall, but our progress was obstructed by the bluff, whose base is washed by the stream. We were not a little gratified, on being informed by our guides that we had passed all the difficult spots. The portages were all over except a short one. The navigation of the river, below this spot, is easy for boats going down stream; the current being very rapid, in many places as much as eight miles per hour.

We observed, on the 12th, a very important change in the geological features of the country. In the morning, the rock was a very decided mica-slate, which gradually passed into a clay-slate, whose primitive characters were inferred from a vertical stratification observed in several places, and especially at a portage called the "Portage du Raccourci," or of the *short cut;* in one place the rock abounds in iron pyrites. At the Mountain Portage, or that made at the Falls of Kakabikka, the rock was found to be in very distinct horizontal stratification. The connexion of this with the former rocks could not be observed, but we are induced to believe that there is a distinct passage of the one into the other. At the descent of this portage we could study the characters of the rock. We observed that the whole mountain is composed of an alternation of strata; some are formed of a clay-slate, and others of a grauwacke or sandstone, formed by the union of grains of quartz and feldspar united together by an argillo-calcareous cement. There are a number of small specks of calcareous spar.

The rock contains nodules of silex of a colour which varies from an ash-gray to a light black; it is pellucid. In some cases it assumes the characters of a Lydian stone. We observed throughout the mountain many points of iron pyrites; in some cases also, a little copper pyrites was seen. The sandstone is formed of rounded grains of feldspar and quartz. We incline to the opinion that this is a transition rock, from the absence or great scarcity of organic remains; we sought in vain for them; it is probable that a more minute search would disclose some. We saw small nodules which, at first sight, were considered as probably of an organic nature, but upon closer investigation they did not justify this belief. The seams of the slate are lined with calcareous and ferruginous incrustations; the latter appear to be in great measure derived from the decomposition of the iron pyrites. While descending the river in our canoes, near *Bad* Portage, we observed the compass vary much; the north pole pointed to the south-east; this continued for a few moments, and induced us to believe that we were then near to a bed of iron ore, which influenced our instruments.

The great mist which arises about the falls, and probably also the nature of the rock, produce a fertile soil, supporting a fine forest of large hazel, spruce, tamarack, red or pitch pine, white pine, larch, &c. The cottonwood was observed on the 12th, for the first time on our return. The aspen had been seen on the 7th, while crossing Frenchman's Portage. The bushes consisted of pembina, raspberry, &c. besides which there was an abundance of whortleberries, &c. The scented grass grew very thickly near the place, and its perfume added to the pleasure we experienced while contemplating the falls. As we passed the portage

we could feel in many places the earth quaking under us from the great concussion produced by the fall of water.

Proceeding down the river, about ten miles below the falls of Kakabikka, we encamped at a portage, occasioned by a considerable bed of flint or silex in every respect similar to that observed at the Mountain portage. It is probable that this flint was in like manner enclosed in the slaty rock, and that being of a more durable nature it has resisted decomposition, while all the surrounding slate was washed away. At this place we found large plums, apparently of a good quality, but they were not yet ripe. The next day, we proceeded on our journey, and were overtaken by a canoe in which one of the partners of the Hudson's Bay Company, Mr. Henry, was travelling. We had the pleasure of witnessing a spirited competition between his canoe-men and ours, in which the former had the advantage. The country improved as we advanced; the banks of the river were generally low, and covered with a fine vegetation, indicating a strong soil. We passed at the foot of a hill called Thunder Mountain; it is supposed to be about five hundred feet high. We passed the ruins of the old fort de Meuron, erected by Lord Selkirk. We were likewise shown the remains of a winter road opened by him from this river to the Grand Portage; it extends in a southerly direction, and is about thirty-six miles long. As we descended the river, divided into three channels, we took the northernmost, and at about ten o'clock on the morning of the 13th, we reached Fort William, having performed a journey of about eight hundred and twenty miles in twenty-seven days, and without accident. The usual passage is about twenty days, and in some cases the distance has been travelled in fifteen, yet considering the nature of

our party and our mode of travelling, this was sufficiently expeditious, as we were detained three days by rainy weather, &c. Instead of an experienced crew, one-half of them had never been in a bark canoe before; and the time necessarily consumed by the gentlemen of the party in making observations, delayed the canoes a considerable while. On reaching the termination of our voyage in canoes, we could not help feeling some interest in the fate of our Engagés, for although their irregular habits, and their wild pursuits, render them at times disagreeable companions, yet their independant disposition, their endurance of all hardships and fatigues with the greatest equanimity, and their light and buoyant spirits, excited our astonishment, and won our admiration. Leading a laborious and hazardous life, in a country destitute of game, they generally subsist upon maize boiled with fat. The maize is first cleared of its husk and then boiled in water. One quart of prepared grain, and two ounces of melted suet, form the usual ration of an Engagé, unless pemmican can be procured. We were likewise obliged to live for a long while upon this unpalatable food; the only variety we had was a sort of hasty pudding, made with meal and buffalo grease, and seasoned with service berry. We have not dwelt much upon the details of a canoe life, although they are extremely interesting to those who share in them for a short time, because this subject has been ably handled by other travellers, and by none better than by Sir Alexander Mackenzie, whose account of the fur trade presents a lively and correct delineation of this mode of travelling. On reference to that work, it will be observed that we followed from Lake Winnepeek to Lake de la Croix, the same course which he had travelled. At this place we had the option of continuing by the course which

we pursued, or of following the boundary line to the Grand Portage, which is about forty miles south-west of the mouth of the Kamanatekwoya. We preferred the former route as it appeared to be the shortest and in best repair, and as the Grand Portage route had been fully explored by the boundary line commission; another motive was, the apprehension that our canoes might, at that season of the year, be detained some time on Lake Superior, in coasting from the Grand Portage to Fort William. In the annexed note, will be found an estimate of the distances from Fort Douglas to Lake Superior, as well as a recapitulation of the Portages and *Decharges* on that route, together with the length of several of the Portages.*

* *Estimate of distances from Fort Douglas to Fort William.*

	Miles.
From Fort Douglas to the mouth of Red river - - -	43
Through Lake Winnepeek - - - - - - - -	64
Up Winnepeek river - - - - - - - -	175
Through the Lake of the Woods - - - - - -	80
Up Rainy Lake river - - - - - - - -	104
Through Rainy Lake - - - - - - - -	45
Up small streams and lakes to the height of land - - -	194
Through small lakes, Dog and Kamanatekwoya rivers, to Fort William - - - - - - - - - -	118
	823

These distances agree tolerably well with those given by Mackenzie.

LIST OF PORTAGES AND DECHARGES.

Winnepeek and Rainy Rivers, &c.

1. No name.
2. Portage des Eaux mouvantes.
3. Decharge de l'Illet.
4. Decharge du défunt Minet.
5. Portage des Grandes Eaux qui remuent.

We heard, while on our journey, that the water of Muddy Lake, near the height of land, was so viscid, that it was with the greatest difficulty that the canoes could be

6.	Portage des Chênes.	Length.
7.	Portage de la Terre blanche.	
8.	Portage du Rocher du Bonnet.	Yards.
9.	Portage du Bonnet - - - - - - - -	1760
10. 11.	Portage du Rocher du Bonnet d'en haut.	
12.	Decharge de la Riviere blanche.	
13.	Portage, (1st,) de la Riviere blanche.	
14.	Portage, (2d,) de la Riviere blanche.	
15.	Decharge de la Chute à Bas rond.	
16.	Portage de l'Agacé.	
17.	Portage du Grand Galet.	
18.	Decharge du Grand Galet.	
19.	Portage du Cantara.	
20.	Portage, dernier, de la Riviere blanche.	
21.	Decharge des Petites Dalles.	
22.	Decharge de la Batture des petites Dalles.	
23.	Portage du Grand rapide, this is the shortest on the route	15
24.	Portage de la Barriere.	
25.	Portage de la Chute de l'Esclave - - - -	400
26.	Portage du Bois brulé.	
27.	Portage de la Petite Pointe de Bois - - - -	100
28.	Portage de la Grande Pointe de Bois - - -	350
29.	Decharge de Jacob.	
30.	Portage de Jacob.	
31.	Portage de l'Isle.	
32.	Decharge de la Cave.	
33.	Portage de la Terre blanche - - - - - -	100
34.	Decharge du Petit rocher de Charette.	
35.	Portage de la Terre Jaune - - - - -	80
36.	Grande Decharge.	
37.	Portage du Rat - - - - - - - -	100
38.	Portage du lac des Bois - - - - - -	100
39.	Decharge du long Sault.	
40.	Decharge du Manito.	

paddled through it. We observed no such character in this lake; it appeared to us that the canoes moved as freely there as elsewhere. Mackenzie mentions having himself

		Yards.
41.	Portage du lac de la Pluie	320
42.	Decharge du petit Rapide du lac de la Pluie.	
43.	Portage Neuf	320
44.		180

De la Croix River.

45. Portage, (1st.) de la Riviere de la Croix.
46. Portage, (2d,) de la Riviere de la Croix.
47. Portage, (3d,) de la Riviere de la Croix.

Bad River.

48. Portage de l'Isle.
49. Portage du Rocher Grenuilleux.
50. Decharge de l'Islette.
51. Decharge du Defunt Courchin.
52. Portage du Petit rocher.

Lakes, &c. near the height of land.

53.	Portage des Grosses Roches	500
54.	Portage des Deux Rivieres	1320
55.	Portage des Morts	550
56.	Portage des Français	3960
57.	Portage de la Pente	550
58.	Portage du Baril	550
59.	Portage de la Savanne	3960
60.	Portage du Milieu	3080
61.	Portage de la Prairie	4620
62.	Portage du petit lac de l'Eau froide.	
63.	Portage de Jourdain.	

Dog River.

64.	Decharge de la Riviere des Chiens.	
65.	Portage du Chien	3168

On the Kamanatekwoya.

66. Portage des Couteaux ou du Diable.

seen a lake of this kind near the height of land on the Grand Portage route. He states that "it has a peculiar suction or attractive power, so that it is difficult to paddle a canoe over it," and further, that he himself "found it very difficult to get away from this attractive power, with six men and great exertion."* We observed no such attractive power.

From Rainy Lake to Lake Superior we did not meet with a single quadruped. The only animals we saw were about thirty or forty birds, chiefly ducks. Among the

67. Decharge des Roses.†
68. Decharge des Grandes Dalles.†
69. Decharge des Epinettes.†
70. Decharge des Fossilles.†
71. Decharge des Bouleaux.†
72. Decharge Mauvaise.
73. Decharge du Défunt Bellanger.†
74. }
75. } Decharge du Plainchant.
76. }
77. Portage de Plainchant.
78. Decharge du Raccourci.
79. Portage du Raccourci.
80. Portage de l'Isle.
81. Decharge du Recollect.

	Yards.
82. Portage Ecarté	880
83. Portage de la Montagne	1408

84. Decharge du Paresseux.

Bad as these names are, we have preferred retaining them, than attempting a new nomenclature. We have not even attempted a translation, which, in most cases, would be unnecessary.

Those rapids marked with a † were passed over by our canoes without unloading. When ascending the stream the canoes are always lightened and towed up.

*Voyages through the continent of North America, by Sir Alexander Mackenzie. Philadelphia, 1802, vol. 1. p. xlviii.

birds observed were the Canada jay,* blue jay,† hairy wood-pecker, Indian hen, golden plover,‡ and woodcock. We killed five pheasants§ on the 7th of September; on the 4th, we heard, near Rainy Lake, the notes of the whip-poor-will. A rail was also seen, but it disappeared too soon to enable Mr. Say to determine the species.

The mosquitoes, which troubled us but little after we left Red river, were replaced near the height of land, by some dipterous insects belonging to two distinct species of the genus Simulium.‖ Their punctures were equally severe with those of the mosquitoes, but they were not so numerous; they principally attacked the face and neck, sometimes, however, they crept under our clothes; they seemed to prefer warm and dry weather, differing in this respect from the mosquitoes, which prefer a humid atmosphere.

A number of aquatic plants were observed in Cats-tail river; among these was one resembling our splatterdock,¶ but smaller; its leaf always floats, but never projects above the water; its flower and seed-vessel are smaller than those which we have generally seen. Besides these there is a small plant, the leaf-stalks of which are elongated; its leaf, which is small, floats upon the water. We saw another plant with small yellow flowers, and leaves very much divided; its stalk projected six or eight inches above the surface of the water.**

The Kamanatekwoya receives no tributary of any im-

* Garrulus Canadensis. † Garrulus cristatus.

‡ Vanellus Helveticus of authors, according to Ord's reprint of Wilson's Ornithology. § Tetrao umbellus.

‖ One of these is the S. venustum, Say, Jour. Acad. Nat. Sci. vol. 3, p. 28.

¶ Nuphar lutea. ** Ranunculus delphinefolius, Torrey.

portance. There is a communication between it and the Thousand lakes, similar to that which we noted as existing between those lakes and Dog lake. That from the Kamanatekwoya passes more to the south, and confirms the conclusions which we had drawn from the existence of the former; it is said to offer a more easy navigation. The White-fish river, which unites with the Kamanatekwoya below the Great Falls, affords, as it is said, a communication with the waters of the Grand Portage route.

From Rainy lake to Fort William we saw no Indians except one Chippewa and his wife, whom we met on Dog river; they were near an otter's hole, and were in hopes of a successful hunt. We are informed that the otters found on these streams are very good; indeed, the quality of the furs generally improves as the animals are obtained in more northern latitudes. While on the Missouri in 1820, Mr. Say was told by Manuel Lisa, one of the most extensive fur-traders in Louisiana, that the otters of the St. Peter were preferable to those of the Missouri. Lisa was impressed with the belief that he could distinguish the one from the other, even when obtained from interlocking streams. He had made up at one time a pack of otter weighing one hundred lbs. although it contained but forty-five skins; they were all, however, from a tributary of the St. Peter. The Missouri skins are inferior both in size and in intensity of colour. When the otter is pursued in winter, it attempts to escape by alternately springing and sliding upon the ice. It subsists upon fish, and meat of almost any kind; it eats frogs, muscles, muskrats, &c. The otters sometimes emigrate in numbers; they seem to be well acquainted with the neighbouring lakes and water-courses. We were told by Mr. Jeffries that they had been known to winter with the beaver, as had been ascertained

by opening beaver lodges, in which sometimes, but not often, one or two otters were found. Hunters usually catch them by means of steel traps, or dead falls, sometimes they smoke them out of their holes; at other times they shoot them.

The fisher inhabits thick woods, holes in trees, and fissures in rocks. It resorts to the shores of lakes, and banks of rivers, in pursuit of mice, frogs, and other animal food. It crosses rivers, but can no more be considered as a water animal than the fox. It is taken in steel and wooden traps; sometimes it is shot by means of spring guns, sometimes also it is chased and fired at.

Mr. Say observed in the small lakes a number of leeches, among which four new species have been established.—Vide Appendix I. D.

CHAPTER III.

Account of the Chippewa Indians. Their usages, manners, and customs.

HAVING described with some detail the manners and habits of the Potawatomis and Sauks, we shall curtail our observations and notes upon the Chippewas, because they have derived from their common Algonquin origin, customs and usages, in many respects very similar. The languages of these nations will, on reference to the vocabularies, (see Appendix,) be found to have a great analogy, while all will be observed to differ much from that of the Dacotas.

The term Chippewa, which is generally applied to this nation, is derived from that of O'chêpê'wàg, which they restrict to the Indians who reside near Fond du Lac, it signifies plaited shoes, from the fashion among those Indians of puckering their moccassins. The whole nation are by themselves styled N'èênâwê's'ìk, which signifies *natural language*, implying that they speak an original tongue, and that other nations have an acquired one. The term Neenawesik includes, however, all those that speak the same language, and that are usually designated under the names of Algonquin, Nypsins, (living near Montreal,) Ottawak, Meskigouk, Menomones, and even the Sauks. At least such was the statement of Charles Bruce, a man who was considered as well acquainted with the Indian manners and habits, and who was recommended to Major Long, as one on whose assertions implicit reliance might

be placed. He accompanied the party as interpreter, from Fort Douglas to Fort William. Much of the information contained in this chapter was obtained from him. We are induced to believe that he never wilfully misrepresented a fact; but we did not find him to be as intelligent as he had been stated to be, and we have therefore omitted such parts of his narrative as savoured of ignorance or credulity. He is a half-breed Chippewa; his information chiefly relates to the Chippewas, properly speaking, who may be included within the following limits: From the Sault de St. Marie by a slightly curved line running somewhat south of west, to the Chippewa river of Lake Pepin; thence, in a direction west of north, to Spirit Lake, and thence to the head of the river Aile de Corbeau; thence to Red river near the Red Fork; thence to the confluence of Mouse, (or la Souris,) and Assiniboin rivers; thence to a point on the Saskatchawan, about one hundred and twenty miles above its mouth; thence to the Riviere des Brochets; thence to the Riviere de Sang; and thence to the Sault de St. Marie. This immense tract of land includes a vast proportion of water, since it embraces the whole of Lakes Superior, Winnepeek, of the Woods, &c. From this circumstance, the population of this nation certainly bears no comparison to the extent of country which they claim. They are reported by old travellers to have been very numerous. Mackenzie attributes the diminution of their numbers to the inroads of the Dacotas, and to the ravages of the small pox; he considered their population as being on the increase, at the time that he passed through their country. From what we have seen and heard on the subject, we are induced to believe that it has diminished since that time, and that it is probably rapidly wasting away. The country which they inhabit is almost destitute of large game; it was, at

one time, well stocked with beaver, otter, and other small animals, which, when sparingly used, may have supported a tolerably large population, but which having been almost hunted out of the country, in consequence of the improvident destruction growing out of the fur trade, have left the land totally destitute, and must have caused a corresponding diminution in the number of inhabitants. We doubt whether the population ever was large; but if so, it has certainly diminished very considerably. The Chippewas are divided into small bands, designated by local appellations, which indicate the spots near which they rove. These bands consist of but few families each. Those near whose residence we passed, are as follows:—

1. Miskwå-kå Mèwè Sågåågån Wènènèwåk, or the people that inhabit the lake of Red waters.

2. Ónèpówè Sèpè Wenenewak, people of Death river.

3. Sågè Wenenewak, the people at the entrance or mouth of Red river.

4. Wåbåsèmò Wenenewak, or White Dog tribe. They reside near a white rock, which is an object of great superstition.

5. Wånåmåkè wåjènènìk, or the people that eat of meat out of skin bags, (pemmican.) These inhabit near the Lake of the Woods, but hunt the buffalo annually on the prairies to the south-west of the lake.

6. Kòchèchè Wenenewak, those that live at the mouth of Rainy river.

7. Oschekkamega Wenenewak, or those of the cross or transverse ridge.

8. Kèchèkåmè Wenenewak, those near the great waters; they reside in the vicinity of Fort William.

9. Ómåschkåsè Wenenewak, those of the white firestone

rock; they reside on the north shore of Lake Superior, near a rock from which they supply themselves with flint.

10. Pâwètèkò Wenenewak, or people of the rapid; these inhabit near the Sault de St. Marie.

We can form no idea of the population of each of these bands, or of that of the whole nation; but, although we travelled over about fourteen hundred miles of country claimed by the Chippewas, from the main fork of Red river to the Sault de St. Marie, the whole amount of Indians whom we fell in with did not exceed one hundred.

We heard of no traditions respecting their origin upon which any confidence might be placed. The tales we heard were so much intermixed with childish details, and contained so many coincidences with the Mosaic doctrines, evidently derived from their intercourse with white men, that they do not deserve to be noted. The Chippewas appear at present to be in the lowest state of advancement. They have no national councils; their dispersed condition and their excessive indulgence in spirituous liquors have destroyed their national character.

They entertain, as all the Indians whom we saw did, a belief in a Supreme being, author of all good; and in a subordinate one, who has both the power and the inclination to do all mischief. They also people the sun, moon, stars, &c. with spirits. Their form of sacrifices differs from that of the Sioux in this, that he who offers the sacrifice frequently partakes of it. It is usual that he who makes the sacrifice should appoint one of the magicians or speakers of the nation, to manage the feast. This man disposes of all, invites the guests; among whom he may include, if he pleases, the person who provides the feast, in which case alone the latter is allowed to eat of the meats prepared; their

sacrifices are unaccompanied by dances. Human sacrifices do not exist at present, but there seems to be a tradition that they formerly existed, and were not confined to enemies; but the subject is obscure.

In fasts they place their principal reliance, considering them as instrumental in producing dreams, which they value above all things; these are supposed to lose their efficacy if they be divulged.

Polygamy is held to be agreeable in the eyes of the Great Spirit, as he that has most children is held in highest estimation; one of their chiefs had nine wives.

In the assigning of a name to a child, much interest is taken. The father applies to one whom he considers as well gifted or favoured by the spirits above, and entreats him to bestow a name upon his offspring. A day is fixed for the ceremony; the friend settles what objects will be required on the occasion, and whatever they may be, the parent never fails in providing them; if not from his own hunt, he obtains them from others. Guests are invited; as soon as the manager appears, the whole of the provisions are placed before him; he takes for himself the head, heart, and other choice parts. The residue he divides among the guests. The tobacco being laid before him, he fills a pipe, offers the stem to the spirits, smokes of it himself, and then proceeds to relate his own adventures, his experience in religious matters, his intercourse with spirits, &c. He generally premises by observing, that when young, he dreamt of a certain object, and valuing his dream much, had never divulged the subject of it, but that, in consideration of his great regard for his friend, he will mention the objects of his dream, and name his young friend after it. He then relates the circumstances attending it, and bestows the name upon the child. It is immediately repeated by all

present. The feasting then commences, and is continued until all the provisions are eaten up; if there be more prepared than the guests can eat, other invitations are sent out, for none can leave the feast until all is consumed. The manager becomes a second parent to the child, who is held to be under great obligations to him. The duty never devolves upon women.

A feast to which still greater importance is attached is that which is given by a parent on the occasion of the first animal killed by his child. This ceremony is alluded to by Harmon,* but he does not mention that this extends, as we were told, to the very smallest animal, and is not restricted to the first success in the chase. We are informed that if an infant should kill a bird, mosquitoe, or even a flea, this is hoarded with care by the parent; it is dried, and as soon as he has killed game enough to give a feast, he invites his friends to share in the repast, in which his son's first trophy is included. The most distinguished friend is, as usual, invited to preside, and it is his exclusive privilege to eat the whole of the animal killed by the child. The future success of the individual is considered to depend upon the age at which this feast was given; the younger the child is, the greater the promise which he gives of future distinction.

The number of children, which a man has, varies much; the average is four; they seldom have as many as seven, unless they have many wives. The pride and honour of parents depend upon the extent of their family. This causes them to attach a high price to them. In some cases this affection is displayed in a barbarous and unfeeling manner, as in an instance which Bruce wit-

* Ut supra, p. 346.

nessed. A Chippewa having ill-treated his wife during pregnancy, she abandoned him, withdrew to her father's, and was delivered of a child. She soon after returned to the vicinity of her former residence; the father claimed the infant; she refused to deliver it; he seized upon it and attempted to take it, while she strongly opposed his effort; in this conflict the poor infant's arm was broken and torn off. Such instances are probably very rare. Generally speaking, the Chippewas become attached to their wives and seldom repudiate them. But in their manners they are rough, even when they do not wish to produce serious injury. Thus, in punishing their children, they frequently strike them so rudely as to stun them. Frequently, likewise, their brutal conduct to their wives produces abortions.

The Chippewas have no marriage ceremony. The business of promoting unions rests principally with the female relations, and originates with those either of the man or woman. In such cases the preliminaries are settled between the mothers without consulting their children. When the terms are agreed upon, and the customary presents exchanged, the property of the girl is removed to the lodge of the man, whom the mother has selected. The disappearance of her property is the first intimation which she receives of the contemplated change in her condition. She is then accompanied to the man's cabin; this is generally done during his absence. On his return he finds a female at his usual resting place, and her baggage placed near his; the purport of this change he cannot misunderstand. If the parties give consent they are from that moment considered as man and wife. If, as is often the case, one or both of them be unwilling, they remain as strangers to each other, avoiding all conversation; but the

parents who have a great influence, and considerable perseverance, generally succeed in bringing them to second their views. Sometimes, however, when the antipathy is great, one or the other elopes from the lodge. An union is sometimes brought on by an inclination between the parties themselves, in which case they apply to their parents to induce them to promote the match; if these object, and the inclination be a strong one, the parental opposition is overlooked; and the union takes place. We are not disposed to believe that there is frequently among the Chippewas an inclination entirely destitute of sensual considerations, and partaking of the nature of a sentiment; such may exist in a few instances, but in their state of society it appears almost impossible that it should be a common occurrence.

The Chippewas believe that there is in man an essence, entirely distinct from the body; they call it O'chêchâg, and appear to apply to it the qualities which we refer to the soul. They believe that it quits the body at the time of death, and repairs to what they term Chêkê Chêkchêkâmê. This region is supposed to be situated to the south, and on the shores of the Great ocean. Previous to arriving there they meet with a stream, which they are obliged to cross upon a large snake that answers the purpose of a bridge. Those who die from drowning never succeed in crossing the stream; they are thrown into it, and remain there for ever. Some souls come to the edge of the stream, but are prevented from passing by the snake that threatens to devour them; these are the souls of persons in a lethargy or trance. Being refused a passage, these souls return to their bodies and reanimate them. They believe that animals have souls, and even that inorganic substances, such as kettles, &c. have in them a similar essence. In this land of

souls all are treated according to their merits. Those who have been good men are free from pain; they have no duties to perform; their time is spent in dancing and singing, and they feed upon mushrooms which are very abundant. The souls of bad men are haunted by the phantoms of the persons or things that they have injured; thus, if a man has destroyed much property, the phantoms of the wrecks of this property obstruct his passage wherever he goes; if he has been cruel to his dogs or horses, they also torment him after death; the ghosts of those, whom during his lifetime he wronged, are there permitted to avenge their injuries. They think that when a soul has crossed the stream it cannot return to its body, yet they believe in apparitions, and entertain the opinion that the spirits of the departed will frequently revisit the abodes of their friends, in order to invite them to the other world, and to forewarn them of their approaching dissolution.

The usual mode of disposing of their dead consists in interring them. It has been observed that the Chippewa graves are always dug very deep, at least six or eight feet; whereas the Dacotas make but shallow graves. Great respect is paid by the Chippewas to the corpses of their distinguished men; they are wrapped up in cloths, blankets, or bark, and raised on scaffolds. We heard of a very distinguished chief of theirs, who died upwards of forty years since, and was deposited on a scaffold near Fort Charlotte, the former grand depot of the North-west Company. When the company were induced to remove their depot to the mouth of the Kamanatekwoya, and construct Fort William, the Indians imagined that it would be unbecoming the dignity of their friend to rest any where but near a fort; they therefore conveyed his remains to Fort William, erected a scaffold near it, and upon it they placed

the body of their revered chief; whenever there is occasion for it they renew its shroud. As a mark of respect to the deceased, who was very friendly to white men, the company have planted a British flag over his remains, which attention was extremely gratifying to the Indians.

The Chippewas obtain the wild rice, upon which they chiefly subsist, by going in canoes, (two men in each canoe,) into the rivers or lakes in which it grows. Both men are armed with long poles. When they have reached a field of rice, one of the men with his pole turns down into the canoe the plant from one side, and the other thrashes it until all the grain is separated from the stem. The same operation is performed with that on the other side; after which they move their canoe to another place, and continue until they have obtained a sufficient supply. They can, in this manner, often collect with ease from twenty to thirty bushels per day. The grain is subsequently dried over a small fire by placing it in a fine sieve made of reeds, secured in a square frame. It is then collected into a small hole, and trampled under feet in order to separate the hull without crushing the grain, which is afterwards separated from the chaff by stirring it in wooden platters, exposed to a gentle wind.

Although the fields of this plant appear to be inexhaustible, yet from improvidence, or otherwise, the inhabitants are frequently in great want. We have already illustrated, by one instance, the cruel necessity to which they are frequently reduced. We might have obtained a number of well authenticated stories on this subject. Bruce knew a man, who in a journey with his wife and two children, aged six and eight years, from the Manitoba Lake to Fort Douglas, had been induced by famine to kill his children; both he and his wife supported themselves upon this food.

But there are instances in which the excuse of famine cannot be pleaded. Frequently after a battle, a warrior will fall upon the body of an enemy, cut off his head, which is accounted the choicest piece, and invite his friends to follow his example, which they are always prone to do; thus, prompted by no necessity or scarcity, they feast upon human flesh. In such cases they are actuated by no superstition; it is not the hope of becoming braver or stouter, but it is merely the desire to satiate their rage upon their enemy which leads them to perpetrate this unnatural deed. But instances are even known, when neither the heat of a battle, nor the desire of venting their revenge on the spot, can be adduced in extenuation; when this meat has been jerked, laid aside, and kept for years, and afterwards taken out and cooked up with other meat in order to make a festival to which guests were invited, and in which none would have withheld from sharing, without being liable to the charge of faintheartedness. It is from these circumstances that we are led to ascribe to the Chippewas the revolting practice of cannibalism, not founded upon scarcity of provisions alone; not stimulated by superstitious notions; not perpetrated merely in the heat of passion; but springing from the worst of motives, a concentrated and lasting revenge, motives which, far from offering any palliation, only add to the abhorrence which we must feel for the perpetrators of this abominable practice.

Among the Chippewas the institution of the *Totem* exists as among the Sauks, and serves as an important distinguishing feature between these two nations and the Dacotas.

The principal disease to which the Chippewas are liable is a consumption of the lungs, induced by the great fatigues and exposures which they undergo; it generally

affects them between the ages of thirty and forty; they linger under its influence for a year or two, but always fall victims to it. Having no remedy of any efficacy against it, they resort to a number of plants, in which, however, they place but little reliance, unless accompanied by charms and incantations. Many of them die of a bowel complaint, which prevails every year, and which is produced by an excessive use of berries and unripe vegetables. This disease does not partake, however, of the nature of a dysentery.

It is about thirty or forty years since the small-pox overran the country, and the terror which it inspired is still to be traced among them.

All the Chippewas attend more or less to medicine, and are acquainted with some plants which afford salutary remedies; but there are some men who make a particular study of the subject, and who are supposed to excel in it; these are consulted in all dangerous cases, and are paid for their attendance: the fees are very high. Harmon informs us that among the Carriers, the physicians receive high fees, but that it is usual for them to return the amount paid when the patient dies. The Chippewa physician resembles that of civilized nations more, in this respect that whenever the patient dies, his death is ascribed, not to the impotency of the physician's prescription, but to the fault of nature, so the fee is kept. Their mode of treatment depends more upon the adoption of proper spells than the prescription of remedies. Every dose which is administered, is accompanied by certain songs, in which the efficacy of the remedy is supposed to reside. The medicines are always pulverized and compounded, to prevent their nature from being detected. Those who are skilled in medicine, will instruct others in their secrets, whenever a sufficiently large fee

is offered them. Diseases are generally considered as having been cast by some person who was ill-disposed towards the patient, either on account of an offence offered, or a civility withheld. When the sorcerer or physician comes, the patient begs that he will transfer the disease to some other person, to whom he may chance to bear a grudge. To effect this, the sorcerer frames to himself a small wooden image of his patient's enemy; he pierces this image in the heart and introduces into it small powders, red, black, &c. which, being accompanied by the proper incantation, are supposed to achieve the desired object. Great reliance is placed in the virtue of these compositions, and there are but few young men or women among the Chippewas, who have not compositions of this kind, to promote love in those in whom they feel an interest. These are generally powders of different colours; sometimes they insert them into punctures made in the heart of the little images which they procure for this purpose. They address the images by the names of those whom they suppose them to represent, bidding them to requite their affection. Married women are likewise provided with powders, which they rub over the heart of their husbands while asleep, in order to secure themselves against any infidelity.

Soothsayers exist among them, both male and female, but the great medicines or charms are only practised by men. Their jugglers appear to be well skilled in the art of imposition. Bruce witnessed their powers frequently, but never could discover their secrets. Thus he has frequently seen the trick alluded to by Carver, of the Killisteno who threw off all the ropes with which he had been fastened, though he was bound hand and foot. It is well known that Dr. Richardson witnessed the failure of the experiment in one instance; and probably the result would be the same

with all, who would use the same precautions which were applied in that case.

Bruce states that a magician once chewed certain roots in his presence, and that his breath appeared to be on fire; it seemed as if he exhaled flames. Another one smoked through a pipe, the stem of which was made luminous every time he drew his breath, and instead of smoke, it was flame which issued from his mouth. Others take up red hot stones with their hands, apparently without any injury; they introduce ignited coals into their mouth likewise without any pain; in such cases they protect their mouth and hands with certain compositions, which they keep secret. As we witnessed no exhibition of this kind, we shall attempt no explanation of their tricks, but merely add, that the number of persons whom we met with, some of whom were well informed, and who all attest having seen these tricks, prove that the Chippewas have, among them, some men well skilled in jugglery.

Poisons are frequently administered by Chippewas to those whom they consider as enemies; these are all of a vegetable nature, and are introduced into their meat or drink.

Insanity is not common among them; it is sometimes affected with a view to succeed in obtaining objects which are at first refused. We heard of two instances, which may serve to show how far an Indian will maintain a deception, if he thinks he may carry his point by it. A Chippewa, named Ogėmâñs, who resided near Dog Lake, was married to a woman called Dėmòyà, but had conceived an affection for her sister named O'kòj, who lived in the same cabin; the latter having refused his offer to take her as a second wife, he affected insanity. His ravings were terrible; nothing could appease him but her presence; the

moment he touched her hand or came near her, he was as gentle as they could wish. At one time in the middle of a winter's night, he sprang from his couch, broke through the frail bark which formed his cabin, and escaped into the woods, howling and screaming in the wildest manner; his wife and her sister followed him, endeavouring to calm him and bring him home, but he seemed to have set all their powers at defiance. At last Okoj came near him, and the moment she laid her hand upon him, he became quite tractable. In this manner he continued for a long while, convincing all the Indians who saw him that he was possessed by a spirit, which nothing but the approach of Okoj could reduce. So deep was their conviction and her's that she at last consented to become his wife, and never after was he troubled by a return of madness. Bruce lived in his cabin for part of that time, and although he suspected that his insanity was feigned, yet he never could detect him.

Another instance, of a somewhat similar nature, happened in the presence of the same interpreter; a young Canadian had secured the affections of an Indian girl called Nisette, whose mother was a squaw that had been converted by the missionaries; being very pious, the mother insisted that the young folks should be united by a clergyman. None being in the country at the time, they travelled to an Algonquin village, situated on the Lake of the Two Mountains, where there was a missionary. Meanwhile the Canadian's love cooled away, and by the time they reached the village he cared no more for the poor girl. Disappointed in her affections, she was observed to sicken, she became subject to fits, her intellect appeared disordered, and she was finally considered as quite insane. The only lucid intervals which she had were in the pre-

sence of her inconstant lover. Whenever he came near her, her reason would return, and she would appear the same as before. Flattered by what he deemed so strong an evidence of his influence over her, the Canadian felt a return of kindness towards her, and was finally induced to renew his attentions, which, being well received, they were soon united by the clergyman. Her reason appeared to be restored, and her improving health showed that her happiness was complete. Although she never was charged with having resorted to a stratagem, our guide who had been with her a long while, and who represented her as a modest, virtuous, and interesting girl, had always considered her insanity as assumed, with a view to work upon the feelings of her inconstant friend. This woman, though a half-breed, had been educated altogether among the Indians, spoke but the Chippewa language, and might be considered as being in point of manners, thoughts, and principles, altogether an Indian. We were informed that her father had given her the French name of Lisette, which was, by the Chippewas, called Nisette, as the *L* appears to be wanting in their language. Among the several hundreds of Chippewa words with which we have become acquainted, not one presents an *L*. This is the more curious as we believe this letter occurs in other languages of Algonquin origin.

The Chippewas are not naturally very strong, but they are active; they will walk, swim, paddle, &c. for a length of time without any apparent fatigue; they are inured to exercise and heedless of exposures of all kinds; they make good hunters and skilful fishers. They are generally tall and thin, and are easily distinguished from the Missouri Indians by the absence of the aquiline nose, which may be considered characteristic of the latter; their bodies and shoul-

ders are well set and well proportioned; their legs are not very good, generally destitute of calf, with thick knees and ankles; their feet are large; their arms and hands small and well-shaped; they possess great strength in the wrist; their voice is strong and harmonious, many of them sing, and their ear appears good. Of their musical talent we cannot, however, form a high estimation. The second air in Plate 5 is the Chippewa song which accompanies the scalp dance. The words of it as furnished by one of our half-breed canoe-men were Wàgòn'àn n'àndâw'àndânk ôtâgâmė kėòshêmôt, which was translated, "What does he, the Sauk, mean, that he runs off thus." The song is said to have been written on the occasion of a Sauk having joined the Dacotas, and guided a party of their warriors against the Chippewas; on being discovered the Sauk made his escape.

Their sight is keen, it becomes weak at an early age; they are frequently afflicted with sore eyes, which is supposed to be caused by their constant exposure to the reflection of the sun by the water during the summer, and by the snow in the winter season. Blindness is not common. Many of them become deaf at an early age; their stomach is naturally very strong, but is impaired by the inordinate excesses in which they indulge when provided with food. They appear to be deficient in mechanical ingenuity, and do not cultivate the few natural talents with which they are gifted. Their ornaments consist of beads, paints, and other trifles which they obtain from traders at very high prices. Their cabins are constructed of birch bark, secured to a slight frame by means of heavy poles placed upon it to prevent the wind from blowing it away.

Hospitality is one of their chief virtues. Their disposition though cheerful is taciturn; the women are more lo-

quacious; in conversation the Chippewas use but little action; their features seldom indicate the emotions which agitate their breasts; but their eyes are very expressive. Smoking is their favourite pursuit, and the pipe is the first object offered to a stranger. The Chippewas are considered to be very ambitious of the situation of chiefs; the intrigues in which they will engage to obtain this post are sometimes very unjustifiable. Their envy of each other's acquisitions is very great, and would probably rise into party spirit if they were not so much dispersed. A few of them are addicted to lying and thieving; these are, however, held in disrepute. The Chippewas cannot be considered as of a very irascible temperament; but when once injured they never forget or neglect to avenge the insult offered them. They are great boasters, and have a high opinion of themselves. Some Indians are represented as supposing themselves to hold a rank in creation inferior to that of the white man, but this is certainly not the case with the Chippewas, who have a common expression which they use when any thing awkward or foolish is done, Wàmètègògin* gègâkèpâtèsè, which signifies "as stupid as a white man." They consider themselves as created for the noblest purposes. The Great Spirit made them that they should live, hunt, and prepare medicines and charms, in which they fancy that they excel. White men, on the other hand, were doomed to the drudgeries of manufacturing cloths, guns, &c. for the use of the Indians.

We found much difficulty in ascertaining the division of time among the Chippewas. Our interpreter at first asserted that there were thirteen moons, then made out but

* Wametegogin does not properly mean a white man, but one who suspends logs in the air, probably from the beams or eaves used in the construction of white men's cabins.

twelve. We are induced to doubt the accuracy of his statement. It is probable, that disconnected as the Chippewas are, and scattered as we find them over an immense tract of country, the terms by which they designate their moons vary much among themselves. It may be questioned whether they have any well defined ideas on that subject. The following are the designations which Bruce communicated.

Kisis signifies *Moon* in Chippewa.

Names of Moons.	Signification.	Concordance.
1. Mĕkĭssåwĕ kisĭs,	Eagle,	March.
Nåmåpĭnnĕ kisis,	Carp,	
2. Nĕpĕnĕsà kisis,	Summer birds,	April.
Ònåpåmò kisis,	Freezing,	
Nĕkĕg kisis,	Wild goose,	
3. Sågipåkåwĕ kisis,	Opening leaves,	May.
4. Òtåĕmĕnĕ kisis,	Ripe strawberries,	June.
5. Mĕnĭnĕ kisis,	Huckleberry,	July.
6. Apĭttånĕnĕpĕnĕ kisis,	Midsummer,	August.
7. Åmånòsò kisis,	Rutting,	September.
8. Pĕnåkwĕ kisis,	Falling leaves,	October.
9. Òshĕkĕpĭppòn kisis,	Approach of winter,	November.
Tåkwåhkĕ kisis,	Hardening earth,	
10. Pĭppòn kisis,	Winter,	December.
11. Nånåbûshĕ kisis,	Name of a man,*	January.
12. Kåchå kisis,	Great moon,	February.
Kånòsis kisis,	Long moon,	

Chastity is a virtue in high repute among the Chippe-

* Nanabush is the name of a fabulous character, whose story appears to be a very long and perplexed one, which we regret that we could not unravel. In the account which we obtained, it appeared that the histories of Adam, Noah, &c. had all been referred to one man, and blended with the original Chippewa traditions.

was, and without which no woman could expect to be taken as a wife by a warrior. Many of the young females are, however, seduced into intrigues which they are obliged to keep secret, if they have any respect for their character; to conceal their crime they do not hesitate to have recourse to abortions. It is not true of the Chippewas that men visit the cabins of those whom they wish to marry, and commence their intercourse by nocturnal assignations; the young men will frequently resort to this, but never when they wish to take a woman as a wife; they know that such a step would injure her reputation. When a mere passing intrigue is their object, they usually carry it on at night. Incest is not unknown to them, but it is held in great abhorrence. Barrenness is held disreputable in women, as it is considered as being brought on by incontinence or wilful abortions. Chippewa women do not bathe in cold water after parturition; in this they differ from the Dacotas, and we are induced to believe that bathing in that situation has never been practised by any of the Algonquin nations. The character of a good woman rests merely in the observance of chastity, of obedience to her husband, and of affection to her children. In case she becomes a widow she ought to exhibit her grief by remaining unmarried for the space of a year, abstaining from all intercourse with men during that time, partaking in no pleasures, wearing no ornaments or bright colours, but clothing herself in ragged dress. It is considered an essential duty of a good man to supply his wife with the best dresses that he can afford. The respect for father and mother is greater than that entertained for grandfathers, &c.; in this particular the opinion of the Chippewas differs from that of the Sauks. The relation of fraternity is strongly marked; a man is held to be bound to marry the widow of his

deceased brother, yet he ought not to do it until after a year of widowhood. He is likewise considered as obliged to provide for his brother's offspring, but this care not unfrequently devolves upon the grandfather. Cousins german are considered in the same light as brothers and held to be bound by the same rules; relationship is not felt beyond this degree. Persons are often adopted as relations; thus when a man has conceived a strong friendship for another, he informs him of the fact; stating, at the same time, that he considers him as resembling a brother, father, or other relation whom he may have lost, and requesting him to assume that character; if the proposition be agreeable to the other, it is accepted, and they ever after stand bound to each other in the same manner as if their relationship was one of blood instead of adoption. They are then required to aid, assist, defend, and avenge each other. If the relationship which they have assumed as existing between them be not of a nature that precludes the marrying of the widow, the survivor is obliged to take her for his wife, as well as to provide for the maintenance of her children. The Chippewas seldom attain to an old age; the average length of men's lives varies from thirty to forty, that of women from twenty to thirty years. Those who live to an advanced age are found to experience the same impairment of their faculties which attends a protracted life among white men. One of the faculties which they retain longest is that of memory, the excellency of which appears to be one of the distinguishing traits of the Chippewas.

Suicide is not of common occurrence among them; some men are impelled to it by disappointments; sometimes also by a high sense of shame. An Indian who had been created a chief by the Hudson's Bay Company, and who had received presents from them, subsequently traded

with the North-west Company. Having returned some time after to the Hudson's Bay Company's fort, he was upbraided by the superintendant as a faithless and ungrateful man; he immediately went out of the fort and hung himself. Among women suicide is far more frequent, and is the result of jealousy, or of disappointments in love; sometimes extreme grief at the loss of a child will lead to it. The Chippewas hold it to be a foolish, not a reprehensible action. They do not consider it as entailing any punishment in the other world. The souls of those who perish in this manner meet, as they think, with a treatment corresponding with the general tenour of their lives, and not affected by this last act of theirs.

Duelling is not practised among them; we heard of but one instance of a combat between two individuals, which, from the attending circumstances, approaches to the nature of the duels of civilized men. Two warriors of distinction who had been noted for their mutual attachment, ceased to be friends; the cause of their disunion remained a secret; no apparent motive could be ascribed to it; it did not spring from any quarrel about their mistresses, or from gambling. After the coldness had subsisted for some time, they were again seen together, and hopes were entertained that the breach had been made up. One evening both were known to be in search of each other; they met, and welcomed with their left hands, uttering an expression corresponding to our word *well;* one of them then passed his right hand behind him and drew his knife; the other immediately did the same, and before the bystanders were aware of their object, each had plunged his knife twice in the bosom of his adversary. Both fell severely wounded; one died, the other survived his wounds. He was observed ever after to be melancholy; but he never could be induced

to explain the motives of the quarrel, or the circumstances of the meeting. There were not a few among them who considered the encounter as premeditated. The man died some time after, and his secret was buried with him.

When warriors return from a successful excursion, they are met and welcomed by such as staid at home; these take away from them every article of property which they have, giving them others of at least equal value in exchange; the articles thus taken from the warriors are held in high estimation, being considered as relics; this extends to their horses, guns, &c. The women dance the scalp-dance; those, whose husbands have brought home scalps, use them exultingly, and relate the adventures which led to their capture. Warriors are never made slaves of; if any be taken prisoners they are soon killed, so are the old women; the marriageable women are reduced to servitude, and are treated with great cruelty by the squaws, the children are generally spared and incorporated into families, where they frequently meet with tolerably good treatment.

CHAPTER IV.

Departure from Fort William. Trap formations on Lake Superior. Michipicotton house. Arrival at the Sault de St. Marie. Conclusion of the Journey.

THE route which we travelled from Lake de la Croix to Lake Superior was first explored and laid out by Messrs. M'Gillivray, M'Leod, and M'Kay, and is very creditable to them; it being probably one of the best and most eligible means of communication between these two points. Fort William was erected in 1803, on a scale commensurate with the importance, which was justly attached to the principal depot of a company remarkable for its active and ambitious views. It covers an area of two hundred yards square, enclosed by a strong picketting, fortified by three block-houses. The accommodations which it affords were sufficient in the days of the prosperity of the North-west Company, to receive forty partners, and at least as many clerks, who, being all attended by their families, were provided with separate quarters. In the large mess-room, where we were handsomely and kindly entertained by the superintendant, Roderick Mackenzie, Esq. much mirth and hilarity formerly prevailed, but from the immense size and deserted appearance of this elegant apartment it had acquired a gloomy character. We regretted to find that this establishment, which had cost a great deal of money, and which had been embellished with many of the luxuries of civilized countries, is about to be suffered to fall to ruin;

the change in the direction of the trade having made this a place of but very little importance.

The residents of the fort chiefly support themselves upon the produce of their fisheries, which yield abundance of choice food. We were present at the hauling in of the net, which contained upwards of three hundred fish, consisting principally of white-fish, trout, the salmon of the Ohio, sturgeon, suckers, perch, &c. Of these the white-fish deservedly ranks first; it is, we think, the best fish we have ever eaten, and is remarkable for the whiteness and firmness of its flesh, as well as for the total absence of the strong or fishy taste, which characterize almost every kind of fish. Its weight varies from three to six pounds. The largest known are said to be caught in the Athabasca, and to weigh twenty-two pounds.

The garden near the fort is in good order, and yields very large potatoes, turnips, &c.; but maize and wheat do not come to maturity, so that the tilling of the ground is not attended to.

The fort is situated, according to Mr. Colhoun's observations, in latitude 48° 23' 33" north. It stands on the river, at about a mile from its discharge into Lake Superior; the country around it, to a considerable distance, is level, rising gradually from the lake shore till it mingles with the highlands, at a distance of from four to five miles from the lake. The situation is very cold, and the quantity of snow which falls annually is considerable. The winters are long; they last about seven months.

The proceeding through the lake in canoes being judged unadvisable, we refitted an old boat which had been left by the Boundary-line Commissioners; it was the only craft of the kind which we could obtain, and although it was very old and crazy, yet, our soldiers, who were better ac-

customed to rowing than paddling, hailed with pleasure a change in our mode of travelling. This boat was about thirty feet long, and barely sufficient for the accommodation of our party, which was then reduced to twenty-two persons, of whom four were Engagés.

Our provisions which were nearly exhausted, were replaced by a supply of a few bags of maize prepared in the usual manner for voyagers. As no meal could be procured, we were obliged to satisfy ourselves with the maize and suet allowed to Engagés.

On the afternoon of the 15th of September, we took leave of Messrs. Mackenzie and Henry, and commenced our voyage along the north coast of Lake Superior. The weather was fair, the wind favourable and not too strong, we hoisted a sail, descended the river, entered the lake, and soon lost sight of the fort. The river discharges its waters into a bay which is separated from the lake by a barrier of small islands, one of which has received the name of Paté, or pye, from its form. This is a high turreted rock, elevated several hundred feet. We passed at a distance from it, but it appeared to be formed of nearly vertical cliffs, and the upper part presented the appearance of a columnar division, while the lower seemed as though it was formed of the same horizontally stratified slate, which we had seen at the Falls of Kakabikka. Our course gave us an opportunity of observing about three-fourths of its circumference, on all which sides it appeared to be inaccessible. We were told, however, that it had been ascended, and that there is, on its summit, a small lake, stocked with excellent fish. As we entered this bay, Isle Royal could be distinguished as a faint blue streak, pencilled along the horizon; and after we had cleared the cluster of small islands which enclose the bay, it was seen stretch-

ing out far before us, its extremity bearing south-east of our course.

Having crossed the bay, which is about fifteen miles wide, we passed a promontory called Thunder Point, the elevation of which was estimated at eight hundred feet. This, as well as the rest of the shores, has a bold and fine outline. It is doubtless formed of the same rock as the islands; its dark-red colour, deepened by the effects of the weather, is picturesquely relieved by an orange-coloured lichen which in many places conceals the rock. The weather being very fair, and the wind having subsided, we determined to continue our route in order to pass a part of the lake, which, being unsheltered by islands, is very rough when the least wind raises a swell. Having merely stopped for supper we resumed our voyage by moonlight. The effect of that evening scene was beautiful beyond description; tall cliffs filled with caverns, and curiously indented by numerous little coves, rose abruptly from the smooth and undisturbed surface of the lake, whose unbounded expanse lay then open to view. In the midst of such a scenery, where both the rock and the lake had an appearance of immensity, and where naught else could be detected by the eye, our small boat seemed a mere speck upon the surface of the waters. At about midnight, we had again reached a shelter of islands, which were very numerous and small; we continued along them until two o'clock, when the moon setting left us in total darkness; as it became both difficult and dangerous to continue our course, we sought for a landing place, which we had some difficulty in finding. There we spent the rest of the night; the next morning we observed that the place where we had landed was covered with an immense number of small waterworn stones,

which were found to consist of an amygdaloidal rock. There were a number of cavities and druses in these, which were lined with minerals of the zeolite family. These stones, which had been seen at the evening encampment near Thunder Point, had given the first intimation of our approach to a formation of a different nature from those which we had previously seen; subsequent observations fully confirmed the fact. On the 16th we continued our voyage, but under the disadvantages arising from a high and adverse wind, which prevented us from making much headway; as long as we could keep under the lee of the islands our progress was satisfactory, but the moment we were exposed to the lake wind our boat moved but slowly. After many arduous exertions on the part of our soldiers to cross one of the short channels that separate some of the islands, we were obliged to retrace our course, and seek a night's shelter on the last island which we had passed. The geologist met here with a very interesting rock, it was the amygdaloid in place. This appeared to be a reddish wacke filled with geodes of quartz hyaline, agate, cornelian, jasper, onyx, &c. besides mesotype and stilbite. The latter mineral is found very generally disseminated; it lines small fissures or cracks in the rock which are generally not more than from one-sixteenth to one-twelfth of an inch in thickness. It is of a fine red colour. In the geodes we observed all those varieties of quartz, which have given so much celebrity to the rocks of Oberstein on the Rhine. It is impossible on beholding this spot on Lake Superior, not to admit it to be a secondary trap formation, similar to those of Germany, Scotland, &c. We find here also, probably, the original site from which have been derived all the specimens of jasper, cornelian, &c. previously mentioned as existing on the

banks of the Mississippi, and for which Lake Pepin has long been celebrated. When we consider the easy decomposition of the wacke in which these geodes are imbedded, we cannot be surprised that the latter are always found loose and separated from the imbedding rock. The amygdaloid was not observed to be stratified, but in some places, it presented a columnar division. We are therefore induced to attribute the columnar appearance which we thought we had seen in the Paté island to the presence of trap rocks at its surface; it appears to us probable that all the islands which we saw are more or less covered with this interesting formation, which was probably deposited at a period subsequent to that at which the horizontal slate was formed. The examination of the geological structure of the north coast of Lake Superior will probably renew the discussion of the aqueous or igneous formation of the trap rocks. Upon this point we will not dwell, because we have no new facts to offer. Our visit to this coast was of too transient and hasty a nature to permit us to extend our observations. We, however, confess ourselves unable to discover in secondary trap rocks in general any signs of a Neptunian origin. If we were disposed to launch into theory, we might connect the existence of these trap rocks with the evident signs of the action of heat observed upon some of the rocks which we met in Winnepeek river. We might perhaps also attempt to refer to volcanic phenomena on a great scale, the changes to which we have already hinted as having taken place in that country. The rupture of the great barrier which confined the waters of the immense lake might be shown to have been probably produced by such causes.

The physical revolutions, of which this part of our continent was the theatre, were too great to attempt to assign

to them any but an immense cause. By those who object to the igneous or volcanic theory of the formation of trap rocks it will perhaps be argued, that the immense extent of country, on the shores of Lake Superior, which is covered with these rocks, opposes the belief of their being the product of volcanoes; but the same has been said of the secondary trap formation of Bohemia, Auvergne, &c. While the igneous origin of these is supported by the respectable names of Desmarais, Humboldt, Von Buch, D'Aubuisson. &c. we may, arguing from the sound principle, that like effects may in both hemispheres be traced to similar causes, be permitted to consider the trap rocks, which we observed, as being probably of a volcanic origin.

We are not aware that the spot which we visited has ever been examined by any geologists, except by Dr. Bigsby and Major Delafield. With the former of these gentlemen we met at the Sault de St. Marie, after our observations on these rocks had been completed; if he has published his views on the subject we have not yet seen them. We have not seen Major Delafield, nor do we know of any publication of his upon this subject, so that the above observations are offered rather with a view to call the attention of future travellers to this interesting question, than from any wish on our part to express a decided opinion upon a subject which, in the present state of our acquaintance with that country, we freely confess to be beyond our reach.

These amygdaloidal rocks, interspersed with other varieties of trap rocks, were frequently seen on the coast of the lake. We, however, often saw also sienite, but never had an opportunity of examining the junction of the two rocks. On the morning of the 17th, we observed a beautiful red porphyry, which on inspection we found to be formed by fine crystals of feldspar, united by a cement of

the same mineral in the compact state; there was also some hyaline quartz throughout the mass, but whether in regular crystals or not we could not determine. This porphyry is not stratified; it very readily decomposes and crumbles into dust, forming a fine gravel of a brick-red colour, affording good beaches for the landing of boats. This rock evinces a disposition to break in vertical and probably columnar fragments, which are, however, soon destroyed by the easy decomposition of the mass. Beyond the place where we saw the porphyry, the amygdaloid recurred under the same appearance, except that its colour was of a bluish cast. It contains a considerable quantity of carbonate of lime, presenting a fine lamellar structure; the carbonate of lime lines fissures in which it has sometimes formed small but distinct crystals. At the evening encampment of the 17th, there were no rocks in place; the beach was strewed with numerous water-worn boulders, among which we observed many fragments of an impure green carbonate of copper, which could not have proceeded from a great distance, as its softness would have soon caused it to break.

The next morning we passed two barges, which we learned were attached to a schooner that is employed under the command of Lieut. Bayfield, of the British navy, in making a survey of the coast; this is a task of some difficulty, but of considerable interest. This part of the coast is termed the Flat countries, and is marked so upon several maps; to prevent the mistakes which might arise from this name, it may be well to state that the term is a translation of the Chippewa word Pâyâguâ schĭnkg, which, according to the antithesis frequently introduced in the names given to particular objects, is here used in opposition to the mountainous and rugged features of the country.

We passed on the 18th a river called Rapid river, from a fine fall which interrupts its course very near to its mouth. We did not see the fall, but the spray rising in a white cloud was very visible, and indicated a considerable cascade. The wind increased so much towards night, that we were highly pleased on reaching a fine bay, in which a sandy beach offered us a safe harbour for our boat; this place is called Bottle Bay. The breeze heightened into a storm, which was accompanied by a heavy rain, that continued all night; the weather was very cold, and our tent-flies had become so thin as to offer no protection against either rainy or cold weather. We had fortunately a plentiful supply of wood near us, and we endeavoured to make ourselves as comfortable as our situation admitted of. The waves in the lake were so high that we were prevented from proceeding the next day. The bay in which we had landed was surrounded by projecting points of land on all sides but one, and this was sheltered by an island which stretched across its entrance. In order to enjoy the splendid spectacle of the lake during a storm, several of the party crossed the point of land which separated our harbour from the main body of water. The large waves which were impelled against the shore were of a more delicate green than those of the sea. It was a noble sight to observe each wave as it approached the high and rugged rock upon which we stood, and as it broke at the base of the cliff, throwing up a foaming spray to a height of at least twenty-five feet. The trees that grow in the vicinity of this bay consist of two kinds of spruce, of the tamarack, larch, white cedar, blister balsam,* white and yellow birch, and mountain-ash. Some of the party amused

*Abies balsamifera.

themselves at our encampments in setting fire to the evergreen trees; the long and thick moss which hangs from one bough to another, communicated the fire instantaneously to the top of the tree, and the brisk blaze which it occasioned produced a fine but awful spectacle. The gum was seen exuding plentifully through every pore of the tree.

There was a heavy fall of snow on the morning of the 20th, but the wind having lulled, we resumed our journey, and continued all day with a fine sailing breeze; we passed a bay, into which a small river discharges itself, and saw at a distance a trading house of the Hudson's Bay Company; but as it would have detained us much to go thither, we proceeded on the journey without stopping. This establishment is called the Peek, which is an abbreviation of the term Pėkåtėk, used by the Indians. We encamped beyond this bay on a rock, which appeared to be formed of a talcose-slate, subordinate to the great sienitic formation. As we advanced the evergreens became more rare, and were replaced by large birch, both yellow and white, and by the aspen.

On the morning of the 21st, as we were preparing to start, one of the men was reported to be missing. His name was Daniel Brown; he was at first supposed to have strayed a little from camp, and a few guns were fired to bring him back; these failing in their object, some uneasiness was felt on his account, as he had expressed himself unwell the evening before, and had been seen up before day-light; but on loading the canoes a few of the articles were observed to be missing; a closer inspection proved that a number of things had been removed; not only the public stores had been pilfered, but even the baggage of some of the gentlemen, and the knapsacks of the soldiers had been opened and robbed. The disappearance of all

this property at one time placed the point of Brown's desertion beyond a doubt; yet if ever a man had cause to adhere strictly to his engagement it was he; for his term of service was nearly completed, and on his starting with the expedition he had been promised his discharge on reaching Mackinaw; a considerable sum was due to him as arrears of pay and ration; he knew that we were fast approaching the settlements. Another motive to restrain him might have been the improbability, not to say impossibility, of his being able to subsist in the country; the only settlement within one hundred miles was the Peek house, which was then closed. The country where he remained has been described to us as covered with such impenetrable swamps, that we very much question whether he ever made his way out of it. Brown had engaged voluntarily in our service, had shown himself active and well disposed. We therefore regretted his desertion, more however on his account than on our own.

After waiting a suitable time for him, we proceeded onwards with a head wind and a high sea, which retarded our progress so much as to induce us to stop in a small cove, which received the name of Sunday harbour. In the evening we proceeded some distance, and made our encampment in a small and dangerous bay, where, for want of better accommodation, we spread our blankets upon a beach covered with large boulders.

On the morning of the 22d we resumed our journey with a high south-easterly wind. We observed, as we advanced, that the country being all sienitic, presented a wilder and more barren appearance than where the trap rocks prevailed; i did not rise to such a height, the shores probably seldom exceeding two hundred feet; but good harbours became more scarce, owing doubtless to the greater

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NORTH SHORE OF LAKE SUPERIOR.

resistance which the sienite offers than the trap rocks, to the destructive action of the waves. The rocks are likewise less ragged; they are steep and rounded at their surface. The divisions which they present are very irregular; we question much whether the rock be stratified, though in some places it assumes that appearance, especially when seen from a distance; for on approaching, the divisions are found to be irregular, at least in all places where we had an opportunity of studying them closely. In plate 13, Mr. Seymour has given a very correct delineation of the appearance of the coast, at a point somewhat west of the "Otter's head." From a distance, we had almost been induced to consider the rock at that place as divided by vertical fissures, but on drawing closer, the features were such as are represented in the plate. At a distance inland, the mountains appear higher, and it is by no means improbable, that they equal, if they do not exceed, in elevation the height of the coast west of the Peek. The mass which constitutes these rocks, we have called a sienite, though it differs materially from the common sienite by the presence of quartz, which in some places forms at least one-third of the mass; perhaps the term of amphibolic granite would be more correct; we think a new name ought to be introduced in science, to designate a rock which constitutes such extensive formations. We have applied the term sienite instead of greenstone, which we believe Dr. Bigsby generally uses, because the proportion of feldspar has appeared to us to predominate over that of amphibole. It bears to granite the same analogy that the *protogine* of Jurine does; for in it, the mica is replaced by amphibole, while in the protogine its place is supplied by talc. In some spots the protogine is also found, as well as a more compound rock, formed of quartz, feldspar, am-

phibole, and talc; but these cannot be said to constitute important features; they are, at best, formations subordinate to the general sienitic mass. The colour of the rock is influenced by that of the feldspar which is in great excess, and is of a flesh colour; the amphibole is green. The quartz sometimes penetrates the rock in the manner of veins, but this accident is considered of contemporaneous origin with the formation of the mass itself, because, in detached fragments of the same, the quartz of the vein, and that in the body of the rock itself, were found to run one into the other. We were detained in this harbour forty-eight hours by the prevalence of the storm. At midnight we were awakened by one of the party, with the unpleasant information, that the boat was in danger of being dashed to pieces against the large stones or small rocks on the shore. The wind was blowing a gale from the south-south-west. A heavy swell was rolling into the harbour, breaking, with a loud noise and high spray, against the immoveable rock on each side, and expending its violence in a dangerous surf upon the stony shore on which our boat was fastened. All our force was immediately summoned, and with much difficulty we succeeded in raising the boat upon logs. Being old and very leaky, it required great care. Had it been unfortunately broken, our situation on that deserted coast would have been very precarious. Few persons have ever attempted to travel by land along the lake shore, and this only in winter, when the swamps, rivers, and small lakes are frozen up. But at other times of the year, it is thought that all travelling, except in boats or canoes, would be impracticable. What aggravated our situation was the state of our provisions, at all times very scanty, but which had lately been much reduced by the pilfering of the deserter. The small store of maize obtained at Fort William was nearly ex-

hausted; no game of any consequence could be seen; the only animals we obtained were a small hare, a pheasant, and half a dozen of red squirrels. With a view to accustom ourselves to the food which must probably soon become our sole dependance, as well as to spare our provisions, we collected some of the lichen which grows upon the rocks, and which is designated by the name of "tripe de roche;" when absolutely destitute of provisions, the Indians sometimes resort to this for food, and the voyagers are also compelled to use it in some cases. One of the clerks at Rainy Lake Fort, Mr. Weeks, informed us that he had seen Captain Franklin, on his return from the Polar Sea, when that enterprising officer and his party, very much reduced in number by privations of all kinds, had been obliged to support themselves for thirty-one days, without meat, merely upon the *tripe de roche*, and the bones and pieces of leather which they could pick up at old camps. Although we were not quite so destitute as Captain Franklin, yet we made two meals upon the rock tripe, and they stand recorded in our recollections as the most unpalatable of which we have ever partaken. The moss is collected, and boiled in water, when, if young and tender, it resolves itself into a thin jelly; we were not well skilled in the selection of the moss, so that, instead of taking the tender and delicate, we took large pieces which, having probably undergone a change in their properties occasioned by age, did not resolve themselves completely in jelly, but left a black matter floating in the liquid, and imparting to it as unsightly an appearance as its taste was disagreeable; we endeavoured by red and black pepper to render it tolerable, but all in vain. When all travellers, in those northern regions, have been exposed to the most severe privations, we would find but little grace in complain-

ing of a couple of meals made upon this food. We will therefore merely add, that we have never tasted a more nauseating food; and that our short experience of it has enabled us to sympathize sincerely in the sufferings which Captain Franklin's party underwent.

A heavy rain, which fell in the evening of the 23d, abated the force of the wind, and the next morning we again ventured in our boat; the waves were high and retarded our progress, but our anxiety to proceed impelled us on. We doubled a high promontory called the Otter's-head, from a fancied resemblance between that object and a large block of stone which appears to be formed in the shape of a truncated pyramid, and to be at least ten feet square, and thirty feet high. It forms a distinct land-mark, which, being very elevated, can be seen from a distance. It is considered half way from Fort William to the Sault de St. Marie. In the afternoon we saw a very fine waterfall, at least thirty feet high; the stream which gives rise to it is considerable, and the fall is close to the lake shore. This was so picturesque that we stopped awhile, to allow Mr. Seymour to take a sketch of it. Proceeding onwards we reached in the evening the western extremity of an island, known by the name of Michipicotton island; opposite to this the rock becomes a talcose-slate, directed north and south, and inclined about sixty degrees to the west. On the 25th, our course was in the strait between the island and main land; this channel is about fifteen miles wide, and the recurrence of the sienitic rock convinced us that the talcose-slate was only a subordinate formation. We entered on that day the deeply indented bay of Michipicotton, which is so wide that voyagers never dare trust themselves across it in open boats, but always coast it. In this case we were particularly anxious to enter it

as our party had been on very short allowance for some time past, and as a fishing establishment exists at the head of the bay. With this view we continued our journey late, and stopped at a very ineligible situation on the shore, where, there being no means of pitching our flies, we lay exposed all night in a snow storm. The weather, which had become very cold, afforded Mr. Colhoun an opportunity of making a curious observation, which he has noted in the following words:—

"I carry my pocket compass in a fob. When it is taken out, one end of the needle is found adhering to the face of the instrument, which is enamelled like that of a watch. The adhesion is not overcome by the approach of steel, but it yields to the weight of the needle, for if it be sufficiently inclined the other end adheres in turn. The duration of this phenomenon varies according to the temperature of the atmosphere; at the lowest temperature, which we have experienced, the needle was unable to traverse for the space of fifteen minutes, as if the cold rendered the operating principle slow to retire. During the warm weather, I frequently remarked a disturbance, but it so quickly subsided, that I was content to attribute it to an accidental agitation of the compass. Electricity, evolved from the body, will be at once looked to, as the cause of this phenomenon, from the connexion long known to exist between it and magnetism. Whether the needle be operated upon immediately, or through the substance of which the face is composed, future observation must determine. Perhaps the Chinese would say that the magnetic virtue is not suspended, but only beneficially modified by some property or concomitant of vital heat, and there appears to be sufficient ground to establish for them a claim to the discovery of its influence, in the last sentence of the following quotation:—

"It has been related on the authority of some Chinese books, that these needles do not receive their virtue from the loadstone, though the Chinese possess that mineral in abundance, but from a curious mixture of orpiment, cinnabar, sandrak, and filings of steel, which, being reduced into a fine powder, are made into a kind of paste by a sufficient quantity of blood drawn from the comb of a white cock. In this paste the needles were said to be put, being previously rolled in paper, and there kept seven days and seven nights, over a clear charcoal fire. After this operation, being taken out, and *worn three days longer next to the skin of a man*, they are found fit for use, pointing directly to the north, and *unliable to the frequent variations which affect those that are touched by the loadstone.*"—History of Marine Architecture, by John Charnock, London, 1802, vol. 3, p. 299."*

Sleep being out of the question during this war of the elements, we resumed our journey long before day-light, and proceeded until about nine o'clock, when we reached the head of the bay. The preceding evening we had stopped at the mouth of a river called "la Chienne" which is renowned for the excellent white-fish caught near it. We met there a few Chippewas who had arrived the preceding day, but who had not yet succeeded in obtaining a supply of fish.

We saw a boat adrift in the bay, and would have approached it, if the waves had not been so high. At the mouth of Michipicotton river there is an extensive sandbar; on the opposite side of which we observed a person in a canoe, who, after having made signs to us which we did not understand, disappeared among the rocks. We entered the

* Mr. Colhoun's MS.

river with considerable difficulty, and landed in safety at Michipicotton house, which we found under the care of Mr. Mac Intosh, the son of the superintendant, and Mr. Robinson, a clerk of the Company's. It was the latter gentleman who had seen us from his canoe, and made signs to us to follow him through an easier pass. The superintendant was absent, having left that place a few days previous on his way to the Sault de St. Marie. At this house we saw the fishery followed on a scale far superior to any we had as yet witnessed. The abundance of fine white-fish, trout, &c. which we saw on the shores, was a great source of delight to such as like us were nearly famished. The trouts which we ate there appeared to us distinct from any other fish, and we regret that they had all been cut up before Mr. Say was enabled to obtain specimens for study and preservation. This trout is of a dusky colour, with light spots irregularly scattered upon its surface; it is a richer and more substantial food than the white-fish, but not so delicate; its flesh is of a reddish tinge which approaches that of the European salmon. The season for catching the trout had nearly expired, while that of the white-fish was just commencing; at that time the latter fish ascends the river from the lake in order to cast its spawn; the time of its migration is perhaps more regular than the analogous one of the shad and herring on the Atlantic coast. This fish is caught in small seines or nets; the number of individuals hauled up at one time varies from fifty to five hundred, and, in some cases, even twelve hundred have been caught at one time. For two seasons previous to our arrival, it was observed that the migrations up Michipicotton river had been much less considerable than usual, but this diminution is probably the result of accidental circumstances which will not, it is believed, affect the general pro-

duce of the river. The white-fish usually returns to the lake about the middle of November. The residents at this post cure a large quantity of the white-fish for winter; this is, however, an expensive preparation, as their salt costs them about two dollars per bushel; they formerly obtained English salt at Montreal at one dollar per barrel. They object to the salt made in the United States; the impurities which it contains render it unfit for the preservation of the white-fish, at least such is the opinion of those with whom we conversed. We mentioned to them the successful experiments made in England on the substitution of sugar to salt in the preservation of fish, and they promised to repeat them; if the maple sugar should answer as well as the cane sugar, there would probably be economy in using it in place of salt. A circumstance which was ascertained here, and which may interest the agriculturist, is that cattle will feed upon fish. We saw cows that have little if any other food, and that thrive well, yielding abundance of good milk, the taste of which is not in the least affected by that of the fish.

In the immediate vicinity of the post we saw but sand; and there is an extent of at least one mile square which appears to be formed entirely by the sand brought down by Michipicotton river. This stream is there about one hundred and forty yards wide; it affords an easy communication with Moose river. We were told that the country north of this bay resembles that near Winnepeek river, being entirely formed of small lakes, rivers, rapids, and enclosing large rocky islands. The country is quite impassable during the summer season except with a bark canoe, which the traveller carries over the portages, and which he again launches after arriving at a navigable stream or lake. In winter the whole country being frozen and co-

vered with snow affords an easy mode of travelling to those who are accustomed to the use of snow-shoes. On these, travellers have frequently walked from Michipicotton to Hudson's Bay in twenty-one days; they usually drag after them a small train or sledge, in which their provisions are packed; they travel in this manner from forty to fifty miles per day; it is said, that they have even walked seventy-five miles, but as these are estimated, and not measured, miles, it is probable that the distances were overrated. The degree of cold experienced at Michipicotton is very great; the winter before our visit to the fort, an alcoholic thermometer fell to – 35° (F.) It has been often known to descend to – 37°, and it was not ascertained that this was the maximum of cold. From these circumstances potatoes and turnips are the only produce raised near the fort.

This place is acquiring more importance, being much resorted to by canoes going to Moose Factory. The dividing ridge between the waters of Hudson's Bay and those of Lake Superior, if indeed the term dividing ridge can be applied to such a country, is said to be about thirty miles north of the lake. Every river in this part of the country presents more or less beautiful cascades. There is a very handsome one about two miles above the fort on a small branch of the Michipicotton; and one at a greater distance is represented as being very beautiful; we saw the cloud arising above it, and from its size suppose the cataract to be very great. Mr. Mac Intosh showed us very fine foliated and transparent gypsum which came from Moose river, where he represents it as being very abundant. From his description it would appear that the country on Moose river is of a different nature from that on Lake Superior; he did not represent it, however, as being a prairie country. A walk up the river offered us the largest whortle-

berries which we have ever seen; they were highly flavoured and very abundant, even more so than those in the vicinity of the Falls of Kakabikka. Other berries also grew abundantly.

Notwithstanding our desire to get under weigh, we were compelled by stress of weather to remain at Michipicotton one day, during which time we experienced a heavy south-westerly gale accompanied by rain, hail, snow, and sleet. The next morning, the wind having apparently abated a little, we resumed our journey, but as soon as we left the river and entered the lake, we found ourselves exposed to a storm so violent that we were obliged again to resort to land. We had travelled but about five miles during near three hours of hard rowing. With considerable difficulty we got our boat round a promontory, and hauled it up, on the shore, in a small cove which appeared tolerably safe. On looking back to the various difficulties which we have experienced on the route, we are induced to believe that we were at no period of the journey exposed to so imminent a danger as on that morning when we were sailing in a crazy boat, on a very rough sea, near an iron bound coast, in which there were but few harbours. We landed, however, in safety, and lay by till the next morning. With a view to keep ourselves as warm as possible, we used our flies and sail in the manner that the Sioux construct their skin lodges, winding them round, in a conical form, upon a frame of light poles, which had been left there by some Indians. In this manner we sheltered ourselves partially against the effects of the snow and wind.

We had on the west coast of Michipicotton bay observed slaty rock, of a dark colour, sometimes almost black; it was well stratified; the direction of the strata was North 40° west, their inclination was vertical. It is found in some

parts to contain much quartz and iron pyrites. This rock rises higher than the coast usually does; it forms a vertical cliff, which appears to be undergoing a very rapid destruction; but the fragments, instead of collecting at the base and forming an inclined plane, are washed away, so that the waters of the lake come up to this vertical bank, which rises like a wall, enclosing the lake. Pyrites appears to abound throughout the mass. It is probable that, at the junction of this rock with the sienite, the river has forced its way into the lake, and that the wide bay of Michipicotton has been opened, for on the east side we again saw the sienitic rocks predominating. At the bay in which we stopped, five miles east of the trading house, we observed the sienite to be intermixed with other rocks, one of which contains a greater abundance of hornblende, and forms a real greenstone; another portion is mixed with talc, and a third portion contains hard nodules of quartz, which would at first convey the idea of a conglomerate, but which, being examined more closely, appear to present no characters but such as are entirely compatible with a primitive and highly crystalline formation; these nodules of quartz are connected by a talcose cement. All these varieties are found together, and belong to the same general mass, of which they form but local or partial features. They are all penetrated by iron pyrites, in great abundance, which in some points were evidently mixed with copper pyrites; all these were examined with care, in hopes of meeting with the native copper, and with other ores of the same metal besides the pyrites; our search was, however, unsuccessful. The great interest which generally prevails on the subject of the copper mines of Lake Superior, as they are called, will perhaps justify us in offering, on this subject, a few observations, which we hazard with some

diffidence. We have seen native copper strewed in many directions, over the great valley drained by the Mississippi and its tributaries, and we know from the reports of all travellers that it exists in many places. It has also been found in several spots on Lake Superior, where it was long since looked to as an object of great promise. The largest mass of it that is known exists on the Ontonagon river, and for a correct account of the characters of this interesting block we are indebted to Mr. Schoolcraft. Our journey having been conducted on the north shore of the lake, we of course had no opportunity of seeing this interesting mass; but all that we know of the native copper of that country leads us to the belief that it has not yet been found *in situ*, and that therefore these loose masses ought not to be looked to as indicative of mines in their immediate vicinity. The great weight and size of the mass on the Ontonagon might, it is true, induce us to believe that it has not been transported from a great distance, if the much greater size and weight of the boulders which are dispersed along the vallies of the Mississippi did not attest, that, whatever may have been the cause which produced these revolutions, the force with which it operated must have been immense. It is not, therefore, to these masses of native copper, but to the ores of this metal found in rocks *in situ* that our attention ought principally to be directed with a view to discover copper mines. We have ourselves seen a number of localities of copper pyrites throughout the primitive rocks of the north coast of Lake Superior, but these were always in small specks. A more minute examination might probably lead to more successful results. We believe that there is a site of copper mines somewhere near this lake, and we think it in no manner improbable that the masses of native copper which occur, from the south shore of Lake

Superior down the valley of the Mississippi, have been scattered by the same cause which dispersed the boulders of sienitic rock. Whether the native copper found to the north-west on Copper Mine river comes from the same place, is a subject upon which we have no data, and therefore can form no opinion. Perhaps, as Mr. Schoolcraft suggests, the Porcupine Mountains, if well explored, would be found to contain copper ores. We do not at present recollect any places where the pyrites or any other ore of copper has been found in any quantity on Lake Superior. Mr. Schoolcraft, it is true, handed to one of our party some fragments of ores of copper, brought to him in 1823 by an Indian, who said he had found them on Kewéena or Kewewenon point, on the south shore of the lake. Upon the vague reports of an Indian we shall build no theory; the question which appears to us of far greater importance is not where the copper lies, but what shall we do with it if it should be found. We are very doubtful whether any other advantage would result from it, at least for a century to come, than the mere addition in books of science of a new locality of this metal. It does not appear to us, that in the present state of that section of our country, and with the unpromising prospects which it now offers, these mines could be worked for a great length of time. Copper, we know, exists in many other parts of our extensive country, and much nearer to the centres of civilization and population. Instead, therefore, of wasting our endeavours and resources, in a futile attempt to discover mines in so remote and dreary a country, let us apply them to the investigation of those sections, where mines could, if found, be turned to immediate advantage. Had the French, who first overran our country, considered this point, and instead of wasting their resources in idle searches, instead of

fitting out an expedition to ascend the Mississippi two thousand miles, for the sole purpose of collecting green earth on the St. Peter, had they spent the same amount in France, in working the mines that have since been opened there, they would have rendered an essential service to their country and benefited their fortunes. Whereas, by the course which they were led to pursue, they added but little to science, at the same time that they ruined themselves.

These observations are offered with the more hesitation, as they are not founded on an extensive acquaintance with the localities of native copper, &c. but rather upon a general, perhaps some may think a hasty and superficial, inspection of the features and resources of that section of country, which many have considered as destined to become the seat of future mining operations on a great scale.

After remaining twenty-four hours encamped, we resumed our voyage, though with the disadvantage of a high sea, and cold and snowy weather; but the wind being favourable we proceeded with facility, coasting along the eastern shore of Michipicotton Bay; after travelling twenty-seven miles, we reached Cape Gargantua which we doubled, and which may be considered as the entrance of the bay. We stopped for a meal at what appeared to be a very safe harbour near to the point. The name of this place is supposed to be derived from a high rock, which rises in a disconnected manner at the entrance of the harbour. To a fanciful imagination it might appear a Colossus. The spot has in truth a very beautiful and characteristic appearance; the rock, which is an amygdaloid, having but little solidity, appears to be fast wasting away under the destructive influence of the waves, producing a number of picturesque and irregularly shaped masses, projecting to a small height

above the level of the lake. In one of these there is a cavity, which by some might be taken for the crater of a volcano, though it probably owes its present appearance merely to the action of the waves upon the rock. This spot is held in great veneration by the Indians, who, whenever they pass it, deposit near it presents of tobacco and other valuable articles, which, in their simple faith, they expect will propitiate the spirit that dwells there.

This place offers one of the best localities for zeolites, and will probably, when better explored, yield specimens of great beauty. We collected some fragments, rather with a view to mark the locality than on account of the merit of the specimens; but Dr. Bigsby, who was there several times, has obtained some very good pieces, for one of which we are indebted to his liberality.

Proceeding onwards we passed several islands, known by the name of Fox and Montreal Islands, and after a long and swift sail, at a distance from the shore, to avoid all its indentations, we reached the place of our evening encampment. While on the trap rocks, we observed that the soil was not deep, but that what there was of it was good, and that it supported a fine growth of cedar. The Montreal Islands were observed to present sandy beaches; the country became lower and less dreary. In the evening we however found no suitable place to pitch our tents, but spread our blankets on the stony beach, having no means of sheltering ourselves from a heavy fall of snow which occurred during the night. At this place we observed two rocks in immediate contact, one of which was a granite formed by a fine pink-coloured feldspar, intermixed with a very small proportion of quartz and mica. Near it was a mica-slate, which we judged to constitute a subordinate formation.

On the 29th we reached at an early hour a projecting point, called the Pointe de Memens, a corruption of the Indian word Marmoaze, which signifies an assemblage of rocks. We there met with a trap rock in place, but the beach is strewed with water-worn fragments of conglomerates or sandstone; these were the first conglomerates which we observed on the lake shore. After leaving this point we proceeded on a long stretch, thirty-one miles long, to what is termed the Grand Cape, which we reached late at night. Our course led us near to a group of small islands, called Maple Islands, and there we first observed the sugar tree in abundance. Being during part of this day at a considerable distance from the north shore, we with great satisfaction discovered the south coast of the lake to be in sight; this afforded us a sure indication of the approaching close of our navigation on this lake. The part of the south shore which first disclosed itself to our view is termed White-fish point. The land appeared to be very low, and nearly overflowed by the waters of the lake. The next point of land which is disclosed on the south shore is Iroquois point, differing but little from the former in its general character.

We had reached the Grand Point at too late an hour to judge of its real situation; it was only, therefore, on the next morning, that we became aware that we had arrived at the eastern extremity of the lake, and that on doubling that cape we would enter a bay from which the river St. Mary issues. We left the Grand Point on the morning of the 30th of September, the weather was fair and pleasant; after travelling a short distance, the rocks were observed to recede gradually from the lake, the shores of which were lined with sandy beaches; but the hills at a distance decreased rapidly in height, and from the change in their

vegetation, appeared to indicate a difference in their geological character.

The Pointe aux chênes, or Oak point, may be considered as the commencement of St. Mary's river, which at the Pointe aux Pins, one mile lower down, is about three miles wide, and has a rapid current and a devious bed. The wind being fair, we spread a sail, and in two hours' time reached the head of the rapid which is termed the Sault de St. Marie. We landed, left our boat, and walked along the Portage road, on the south bank of the river, to the "Cantonment Brady," which is the highest military post occupied by the United States' troops on the chain of lakes. A mill-race has been dug from the head of the rapid to the fort; it is somewhat less than a mile long; it discloses the nature of the rocks, which consist of red sandstone horizontally stratified. This was the first spot at which we observed this rock in place, but Dr. Bigsby has informed us that he found it in many of the spots at which he occasionally encamped on the north shore of the lake. In Mr. Schoolcraft's narrative we are informed that this rock extends to a very considerable distance along the south shore of Lake Superior. The canal or mill-race, which the garrison has opened at the Sault, has been made with much less difficulty and expense than would at first have been expected, from the apparent magnitude of the undertaking; at a very slight additional expense the canal might be enlarged so as to render it navigable for bark canoes of the largest size.

Our party travelled the distance from Fort William to the Sault de St. Marie in fifteen days; this passage was considered very short considering the season. An idea can be formed of our success in this respect from the circumstance that the superintendent of Michipicotton house.

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Mr. Mac Intosh, who left his post eight days before we did, arrived at the Sault three hours after we had landed; yet this gentleman was travelling with a crew of experienced voyagers, but being in a canoe he was frequently obliged to lay by. Our boat though flat-bottomed, and in a bad condition, answered our purpose very well. The north coast of the lake, along which we travelled, is considered somewhat safer at that time of the year than the southern; it is said to afford many good harbours, the entrances to most of these are, however, concealed; hence none but experienced pilots can find them out. Our Engagés not being well acquainted with the coast, we were frequently at a loss for harbours when we needed them most. The route which we travelled on the lake was estimated by Major Long at three hundred and eighty-three miles; no doubt a considerable saving in the distance could be effected in fine weather by keeping further off from the coast, and by cutting across Michipicotton bay. The season during which we travelled on the lake was unusually boisterous and severe; we had snow, hail, or rain, for nearly the whole of the time.

The country along the lake is one of the most dreary imaginable, considering its latitude, and the facility with which it may be approached. Its surface is every where rocky, broken, and unproductive, even in the natural growth of trees common to rugged regions; its climate is cold and inhospitable; the means of subsistence are so circumscribed that man finds no possibility of residing on it in a savage state. Game is extremely scarce. Few, if any, esculent plants grow spontaneously. Fish, it is true, abound in its waters, but only such as can be plentifully caught by means of nets; the total absence of sandy beaches on the greater part of its extent prevents

the use of nets, and of course precludes even this last mode of subsistence. Accordingly all the Chippewas that we saw on the lake did not exceed half a dozen of families. If a few fertile vallies should ever be found in the country they will be so closely surrounded by rocky hills and dangerous swamps as to render them no desirable abode for civilized men. Indeed to estimate the future population of this section of country from its present aspect, it would be a highly exaggerated allowance to admit a single inhabitant for every thousand acres of land. But from its very wildness and dreariness this coast draws a charm which we would vainly hope to find in more favoured regions. The high hills, the rugged precipices, the rocky shores, with their spare vegetation, are relieved by the transparency and purity of the waters that wash their base; these are often so great that the pebbles can be distinctly seen at a depth of more than twenty feet. The canoe frequently appears as if suspended in air, so transparent is the liquid upon which it floats; the spectator, who keeps his eyes too long intent upon gazing at the bottom, feels his head grow giddy, as though he were looking down a deep abyss.

At Cantonment Brady, the party were kindly and hospitably received by the officers of the garrison, which was at that time under the command of Major Cutler of the 2d regt. United States' Infantry. The gentlemen of the party enjoyed a few interviews with Mr. H. R. Schoolcraft, who was stationed there as Indian agent; they found this gentleman very obliging in communicating to them his observations on the topography and mineralogy of the country, as also upon the character and dispositions of the Indians within his agency. Mr. Schoolcraft has devoted much time to this latter subject, and has collected much valuable information, which he kindly offered to impart to our gen-

tlemen; they however declined this kind offer, having ascertained that Mr. Schoolcraft had previously intended the information for Governor Cass, who, as they were pleased to hear, is collecting materials towards a general account of the Indians within the district of Michigan. From the industry with which these materials are collected, no doubt can be entertained that whenever Governor Cass will publish his account of these interesting nations, it will contribute much towards the history of the aboriginal tribes of America. Indeed the certainty that this work will offer a much more complete and satisfactory account of the Chippewas than we could have done was one of the motives which induced us to curtail our observations on this subject.

Having brought the history of our voyage to the Sault de St. Marie, we deem it proper to conclude it there, being persuaded that the observations which we made after that time, having been of a hasty and superficial nature, could contribute but little to the history of a country which has been so long known, upon which so much has been written, and which, by becoming the seat of military operations, during the war of 1812, has acquired so great a degree of celebrity.

It will be sufficient for us to state that the party left the Sault in their open boat, on the 3d of October, and reached the island of Mackinaw on the next day. There they divided. Lieuts. Scott and Denny proceeded with the ten soldiers to Green Bay, thence to ascend the Fox river to the portage, and descend the Wisconsan to the Mississippi. We have heard with satisfaction, by a letter from Lieut. Scott, that he reached Fort St. Anthony with his command without any accident, though after having suffered much from cold weather. At Mackinaw Major Long embarked

with Messrs. Say, Keating, Colhoun, and Seymour, on board the revenue cutter, the Dallas, which carried them as far as Detroit. On this voyage across Lake Huron and St. Clair, they were three days, during which they received the kindest atttentions from the commander of the cutter, Captain Knapp, who very politely gave up to them the use of his cabin. After remaining three days at Detroit they proceeded to buffalo, on board of the steam boat that plies upon Lake Erie. They then visited Niagara, and travelled by land to Rochester, where they struck the Erie canal; they proceeded down the canal to Albany, a distance of two hundred and fifty eight miles. On the 26th of October they reached Philadelphia, having been absent about six months, during which time they travelled over upwards of four thousand five hundred miles, the whole party being blessed with health, meeting with no accident of any account, and undergoing hardships and privations, far less considerable than those which they had expected to undergo, and which have tried the perseverance and courage of other explorers.

CHAPTER V.

General description of the country traversed by the Expedition, designed as a topographical report to the War Department, by S. H. LONG, *Major United States' Topographical Engineers.*

THE region, whose description is intended in the present essay, as embracing the route of the Expedition, is limited, on the N. W. by the intersection of the 51st degree of N. latitude with the 97th of W. longitude, and, on the S. E. by that of the 40th degree of latitude with the 74th degree of longitude west of Greenwich. Its figure is rhomboidal, about thirteen hundred miles long, from E. S. E. to W. N. W. and has an average width of between four and five hundred miles. Its boundaries may be traced on the accompanying map, being coincident with the route of the Expedition.

The researches of the Expedition were more immediately limited to the region above specified, but our attention has been nevertheless directed to the attainment of new information relative to other parts of the country, whenever a favourable opportunity presented. The substance of the whole is briefly embodied in the following remarks, with the view of giving a geographical outline as complete and satisfactory as circumstances will permit.

In order to render the description as plain and perspicuous as practicable, we shall arrange our remarks under separate heads, corresponding to particular divisions of the route of the Expedition, and conclude with a few observations of a more general nature and application. The follow-

ing division of the subject may therefore be regarded as applicable, viz.:—

1st. Of the country between Philadelphia and the Ohio river.

2d. Of the country between the Ohio river and Lake Michigan.

3d. Of the country and navigable communications between Lake Michigan and the Mississippi.

4th. Of St. Peter's river and the adjacent country. Also of the Coteau des Prairies.

5th. Of Red river and the adjacent country.

6th. Of the country between Lakes Winnepeek and Superior.

7th. Remarks on a variety of subjects connected with the topography of the country.

I. *Of the country between Philadelphia and the Ohio river.*

After all that has been written in description of this part of the country, a very few remarks relative to its general aspect and character will suffice, on this occasion. Eastward of the Alleghany Mountains, the country is most agreeably diversified with hills and valleys, and is prolific in all the vegetable products common to a temperate climate, and suited to the convenience and welfare of man and beast. On approaching the range of mountains just mentioned, the elevation above tide water gradually increases, and the irregularities of the surface become more apparent. Connected with these appearances some slight change of climate is perceptible, and is evinced by a more frequent oc-

currence and longer continuance of frosts and snows upon the surface. On entering upon the mountainous range, a difference both of aspect and character is readily perceived. A multiplicity of ridges, stretching in a north-easterly and south-westerly direction, alternating with vallies of various widths and depths, is here presented; the ridges rise to the height of from twelve hundred to three thousand feet above tide water. A change of climate, corresponding to the difference of altitude, is also observable; and it is remarked that frosts occur on some of the ridges, more or less frequently in every month of the year. Such is the change of climate occasioned by a difference of elevation in these ridges, that maize, which grows in great perfection in the vallies, cannot be raised upon the mountains, where the altitude is greater than about fifteen hundred feet. It is remarkable also that wheat grown upon the mountains, at a considerable elevation above their base, is heavier by a few pounds in the bushel, and is said to be of a better quality in other respects, than that of the vallies and other adjacent grounds.

The surface of the ridges is often broken and rugged, and generally covered with a profusion of rocks and stones, of the older sandstone formation. The mountain growth consists principally of pitch pines, scrub oaks, chesnut, hemlock, aspen, laurel, bramble, &c.

North-westwardly of the Alleghany Mountains, the country presents a surface exceedingly diversified with hills and vallies, yet more generally susceptible of cultivation, and not less fertile than to the eastward. Its general elevation above tide water may be estimated at about one thousand feet, and its climate in most respects is very similar to that of the country adjacent to the mountains, on the other side, in the same latitudes. In this respect,

however, as also in its productiveness, some slight difference may be occasioned by the natural condition of the two tracts, in a geological point of view, the country eastward of the range being of a primitive, and that westward of a secondary character, limestone being common to both.

II. *Of the country between the Ohio river and Lake Michigan.*

On this part of the route are presented two varieties of country, distinctly marked; the one exceedingly hilly, like that between the Alleghanies and Ohio, before noticed, and the other of a waving aspect, presenting extensive flats, with occasional hills and swells of moderate height and declivity. The line of division between these two tracts commences on the Mississippi, near Cape Girardeau, and runs north-eastwardly to the Miami river, thence eastwardly to the Muskingum, which it crosses near Zanesville, and thence north-eastwardly, passing along the sources of Big-Beaver river, and terminating near the eastern extremity of Lake Erie. (See Account of the Expedition from Pittsburgh to the Rocky Mountains, vol. 2, p. 333.) The region situated between this line and the Ohio river exhibits, as before hinted, a surface exceedingly diversified with hills and vallies; the hills uniformly present rounded summits; rocks are seldom abundant upon the surface, though secondary lime and sandstones prevail at a moderate depth below; precipices no where occur except as boundaries to the numerous water-courses. The general elevation of this region may be estimated at between six hundred and one thousand feet above tide water, gradually increasing from the mouth of the Ohio upwards. The inequalities of surface do not render it unfit for cultivation. The vallies, es-

pecially of the principal streams, are exceedingly fertile, and the hills, though less productive, afford the means of subsistence in abundance. The soil of both is almost uniformly an argillaceous loam; that of the former is deep, and contains much lime and vegetable mould, that of the latter is less prolific, though deeper than is usually to be met with in hilly regions, and much more easily cultivated, owing to its being light and free from stone.

North-westwardly of the limit above-mentioned, the country wears a very different aspect, palpably manifest in travelling in the direction of the assumed line. The river vallies are broader and more regularly defined, being separated from the high lands by parallel ranges of bluffs or mural banks. No hills of any considerable height or magnitude, if we except numerous swells, some of which are broad and extensive, are here to be seen. Extensive tracts of flat country, with scarcely an undulation upon their surface are presented; also many large swamps and morasses, some of which are deep and miry. The country on the Sandusky and St. Mary's rivers, as also upon many other streams in this quarter, abounds in blemishes of the nature last mentioned, for which, remedies no doubt will be provided, as soon as the population and wealth of the country are sufficiently advanced to admit of the various improvements that are practicable.

In the northerly parts of Illinois and Indiana, as also in the west corner of the state of Ohio, are extensive champaigns, flat and marshy, of a soil apparently very rich, but too wet for cultivation. A large proportion of the flat lands of Ohio and Indiana, however, is heavily wooded, and is for the most part denominated the Beech lands, the red beech being the prevailing growth upon it. The soil of these lands is thin, but remarkably black, rest-

ing upon a bed of sand, gravel, or pebbles. In addition to the tree just mentioned, the woodlands comprise the oak, ash, elm, hickory, sugar-tree, wild cherry, black walnut, liriodendron, poplar, hop-horn-beam, and in some places cotton-wood and sycamore, most of which attain a gigantic size.

The general elevation of this portion of country may be estimated, as before, at about one thousand feet above tide water. It is remarkable, that the strip or zone of country, in which numerous tributaries of the Ohio interlock with those of Lake Erie, should decrease in altitude as we proceed from the Miami river, eastward; also, that a hilly region should intervene between the Ohio river and the zone above mentioned, or the country in which its tributaries, from the north, have their origin, of greater elevation than that of the zone itself. Yet however repugnant to the doctrines of the geologist, and however discordant to the general principles of hydrography, such is nevertheless the case, as has been satisfactorily ascertained by the surveys recently made in Ohio, on the several canal routes that have been explored. From the Miami northwestward to Lake Michigan, a very gradual declension of the surface takes place, in so much, that in the vicinity of the lake, the general level is about seven hundred feet above tide water.

In regard to the facilities for artificial water communications, between the lakes and the Mississippi, through this district of country, no doubts can exist, but in relation to the supply of water on the several summits in a dry season. Of the routes across the state of Ohio, notice has already been taken in a former part of this work. The route through the Maumee and Wabash, and that through the two St. Joseph's and Kankakee rivers, remain to be explored. Of the practicability of these routes there can

be no question, except as to the quantity of water that can be brought to their summits, as before intimated.

A water communication connecting the west end of Lake Erie with the southern extremity of Lake Michigan will ere long become a subject of great interest, inasmuch as it must be regarded as an important link in the grand chain of internal navigation connecting New York with the country of the Mississippi. The route by which this is to be effected remains also to be explored, but the abundance and size of the water-courses intervening between these two places, leave but little room to doubt of its practicability.

III. *Of the Country and navigable Communications between Lake Michigan and the Mississippi river.*

No part of the region traversed by the Expedition can be considered more interesting than that now under consideration. The surface, which is generally prairie, is agreeably diversified by gentle swells and vallies, and checkered with skirts of woodland fringing its numerous water-courses. The soil in many places is exuberant in a high degree, and is no where infested with rocks or stones. The bottoms especially exhibit proofs of the greatest fecundity, in the rankness of their vegetable products; to these valuable traits must be added the abundance of lead ore, which prevails in many places; all of which conspire to render this country quite as valuable as any other tract of equal extent within the basin of the Mississippi. In this brief recital of the natural advantages and resources of the country, it should not be forgotten, that the facilities for water communications between the lake and the Mississippi are numerous; there being no less than three differ-

ent routes through which loaded canoes have passed from one to the other in times of inundation, without the intervention of portages.

The foregoing remarks are intended as applicable more particularly to the tract bounded, north by the Wisconsan and Fox rivers, south by the Illinois, east by Lake Michigan, and west by the Mississippi river, than which few countries of equal extent can boast of a finer aspect. The rivers included within the limits just assigned, are the Chicago, Milwacke, Manitowacke, and several others of less note, tributary to Lake Michigan, the Des Plaines, De Page, Fox, Mequin, &c. tributary to the Illinois, the Rock and Makabea or Small Fox river, and several others of smaller size that mingle their waters with the Mississippi. Rock river has many tributaries, among which are the Kishwake, Pektannon, Little Pektannon, and Wassemon rivers, all respectable streams, never before recognised in the geography of the country. The vallies of the water-courses generally, and particularly of those just mentioned, are bounded by parallel ranges of hills, of moderate height and gentle declivity.

The country embracing the southern extremity of Lake Michigan, and extending inland many miles from the lake, presents no hills, except the elevated sand-drifts that bound that extremity of the lake. On the contrary, an extensive flat embracing woodlands and meadows alternating with each other, spreads from the St. Joseph to the Des Plaines, and from the lake to the Kankakee. Its soil is apparently good, but the chilling northerly winds, which blow from the lake, charged with vapour, seem to carry with them blast and mildew, and render its prolific energies abortive. At Chicago, which is situated within this tract, attempts have been made to cultivate maize, wheat,

oats, and other products, but they have often proved fruitless.

In the vicinity of the Mississippi, the high lands on both sides of the river are intersected by numerous deep ravines and water-courses, which, together with the bluffs and precipices by which the river valley is bounded, give to that part of the country a hilly and broken aspect. At the mouth of the Illinois the high lands are elevated from one hundred to one hundred and fifty feet above the river. At Prairie du Chien their elevation is four or five hundred feet. About one hundred miles above this place, the high lands are said to be more elevated than on any other part of the Mississippi, rising to seven or eight hundred feet. At the mouth of the St. Peter, their height varies from one hundred to one hundred and fifty feet.

On the Wisconsan river, at the distance of fifty or sixty miles eastward of the Mississippi, commences a region of hilly country, which extends northwardly to Lake Superior, and embraces the head waters of the Wisconsan, Fox, Menomone, Ontonagon, Bois Brulé, St. Croix, Chippewa, Black, and Prairie de la Croix rivers. To this region the name of the Wisconsan Hills has been given, which are terminated on the south by the Ocooch and Smoky Mountains, whose altitude is about twelve hundred feet above the common level, or two thousand feet above tide water. Its aspect is exceedingly diversified by hills and vallies, the former of which are high and rugged, supporting a heavy growth of pine, &c. while the latter often present extensive flats, abounding in lakes, swamps, and ponds, yielding wild rice in great abundance and perfection. The rocks of the southern portion of this region may be regarded as of a secondary character, while those of the northern, according to Mr. Schoolcraft, are primitive. In the former of these

localities lead has been found, and no doubt exists in great abundance, and in the latter it is believed that rich and extensive beds of copper ore are of frequent occurrence. To the westward of the Wisconsan Hills, the country assumes an aspect somewhat similar to that mentioned in the former part of this article, though it does not deserve so high a rank in an agricultural point of view. The soil is more sandy and bibulous, the surface more broken, the forest trees are less stately, and vegetation less luxuriant.

On the west of the Mississippi above Prairie du Chien, upland forests of considerable magnitude present themselves at the distance of six or eight miles from the river, and continue in view for the distance of nearly one hundred miles above that place. Their extent westward, however, cannot be very great, for the prairie region, in which the De Moyen has its sources, commences at the distance of above one hundred miles from the Mississippi, and excludes all appearance of woodlands except in insulated groves and narrow skirts bordering upon the water-courses.

The growth of this section of the country comprises the following trees, viz. the white, black, red and post oak, hickory, walnut, sugar-tree, maple, linden, cotton-wood, white, blue, and black ash, elm, hop-horn-beam, red cedar, sassafras, willow, aspen, &c. in addition to which sycamore, coffee-tree, mulberry, pecan, Spanish and willow oak, persimmon, honey-locusts, black and red haw, crab-apple, plum, pawpaw, dog-wood, spice-wood, &c. are found in the country below rock river. Gum, cherry, red birch, butternut, or white walnut, red hickory, and slippery elm, are occasionally to be met with. Yellow, pitch and white pine of an excellent quality abound upon the Wisconsan Hills. White birch, white cedar, spruce, juniper, &c. sometimes appear in the woodlands above Prairie du Chien. The un-

dergrowth of the country consists principally of hazle, sumac, elder, prickly ash, alder, thorn, bramble bush, laurel, gooseberry, black currant, chokeberry, sand cherry, grape-vine, hop-vine, bitter-sweet, night-shade, honeysuckle, wild gourd, poison-vine, spikenard, sarsaparilla, grasses, ferns, and a variety of other herbage, conspicuous in many instances for the beauty of its flowers. The islands, which are exceedingly numerous in this part of the Mississippi and its principal tributaries, sustain a dense growth of cotton-wood and willows, surmounting thickets of shrubbery and vines, rendered almost impenetrable by the luxuriance of their growth.

Under this division of our subject, we shall particularly notice a portion of the Upper Mississippi, (by which is meant that portion of this noble river, situated above the confluence of the Missouri,) the Illinois, and the Wisconsan rivers, referring to the accompanying map for the names and localities of the rest.

The valley of the Upper Mississippi, below the Falls of St. Anthony, varies from three to ten or twelve miles in width, except at the De Moyen and Rock Island rapids, where its breadth is so contracted that it affords sufficient room only for the bed of the river, which at the former place is about twelve hundred yards wide, and at the latter from eight hundred to one thousand. It is uniformly bounded by high bluffs, which are generally abrupt, and often precipitous. Within the valley, especially in the vicinity of Lake Pepin, insulated knobs and hills of considerable magnitude, based upon horizontal strata of rocks, and towering to various heights, from one hundred to five hundred feet, are frequently to be met with. These must be regarded as the remains of the high country, through which the river in process of time has scooped out its

broad and deep valley. They serve not only to beautify the landscape, but to remind the traveller of the great changes wrought upon the surface of the globe by the agency of water.

The upper Mississippi is also remarkable for the great width of its bed, and the multiplicity of islands it embosoms. It spreads in many places to the width of five or six miles, and seems to lose itself among countless islands through which it flows in numberless small channels. Between the mouth of the Missouri and Lake Pepin, no less than six hundred and forty islands of considerable size have been enumerated. Lake Pepin is a very beautiful enlargement of the river, twenty-two miles long and from one to three broad, destitute of islands, and affording a great depth of water. Above the lake the river becomes narrower, and the islands smaller and less numerous.

The valley country is made up of prairies and woodlands alternating with each other; the former of which are usually elevated above the reach of floods, and are richly carpeted with herbage and flowers, while the latter sustain a dense and heavy growth of trees, intermixed with vines and shrubbery, and are, for the most part, subject to inundation in flood time.

During the spring floods, which usually prevail during the months of April, May, and June, this part of the Mississippi is navigable to the mouth of the St. Peter for boats of great burden. In a low stage of water the rapids above mentioned oppose serious obstructions to the navigation, which is also rendered still more precarious by the numerous shoals and bars with which the bed of the river is infested. The rapidity of the current decreases as we ascend, being about three miles per hour at the mouth of

the Illinois, and one mile and a half near that of the St. Peter. At the de Moyen rapids, the river is hurried down a descent of about thirty feet in the distance of eleven miles, and at the rapids of Rock Island, which are about fifteen miles long, the aggregate descent is about forty-five feet.

A description of the Falls of St. Anthony has been already given in the preceding narrative. For a description of the Mississippi above this point, we beg leave to refer to the "Account of Pike's Expedition to the source" of that river, as also to the narrative published by Mr. Schoolcraft, and to that which Captain Douglas is preparing for the press.

The Illinois river is to be ranked among the most important of the western rivers, inasmuch as it affords greater facilities as a water communication between the lakes and the Mississippi than any other stream. Its length from its mouth to its source, at the junction of the Kankakee and Des Plaines, is three hundred miles. For a distance of fifty miles on the upper part of the river shoals abound, which are serious impediments to its navigation in a low stage of water. The most formidable obstructions of this nature are the rapids situated at the confluence of Vermilion river, which are utterly impassible for boats except in times of flood. Below this, the navigation is exceedingly easy, for boats of moderate draft and burden, to the mouth of the river, a distance of two hundred and fifty miles. The current throughout the distance last mentioned is exceedingly gentle, often quite imperceptible; indeed, this part of the river may with much propriety be denominated an extended pool of stagnant water. Its valley is broad and bounded by parallel ranges of bluffs, presenting, in most places along the margin of the river, low bottoms covered with a dense growth of timber trees, surmounting thickets

of weeds, vines, and bushes almost impenetrable. The woodlands thus situated are subject to inundations, during the prevalence of a moderate freshet, but in their rear, at a considerable distance from the river, are extensive prairies of a rolling aspect, and richly adorned with herbage. The ascent to the highlands across the bluffs, is generally gradual, but in some instances abrupt.

The navigable communication above mentioned is continued from the head of the Illinois by two different routes, viz. to Chicago fifty miles through the river Des Plaines and a small water-course connecting the stream just mentioned with Chicago river; and to the St. Joseph of the Lake about one hundred and twenty miles, through the Kankakee, and a small tributary of the St. Joseph interlocking with that river in a tract of marshy country. Through both of these routes loaded boats have passed from the lakes to the Illinois during the vernal floods. The route first mentioned is very direct, and is now frequently traversed with boats of burden; the other is extremely tortuous along the windings of the Kankakee, and is seldom practicable.

The Wisconsan, from its magnitude and importance, deserves a high rank among the tributaries of the Mississippi. When swollen by a freshet it affords an easy navigation for boats of considerable burden through a distance of more than one hundred and eighty miles. Its current is rapid, and, like the Mississippi, it embosoms innumerable islands. In a low stage of water its navigation is obstructed by numerous shoals and sand banks. At the distance from its mouth above mentioned, there is a portage of one mile and a half, across a flat meadow, which is occasionally subject to inundation, to a branch of Fox river of Green Bay, thus affording another navigable communication be-

tween the lakes and the Mississippi, through which boats have been known to pass. The valley of the Wisconsan is somewhat narrower than those of most other rivers of this region, but in other respects it is very similar to them. The high country here assumes a more hilly and broken aspect, and the soil becomes more sandy and meagre.

While on the subject of water communications it is proper to remark, that a third route, viz. by way of the Rock and Milwacke rivers, has been found practicable for canoes.

IV. *Of the St. Peter river and adjacent country. Also of the Coteau des Prairies.*

The St. Peter, called in the Sioux language Menesota Watapan, or River of turbid water, receives most of its waters from a remarkable ridge distinguished by the name of Coteau des Prairies, hereafter to be noticed. Its most remote source is a small lake, called Pole-cat Lake, about three miles in circumference, situated at the base of the ridge just mentioned, in latitude about 45° 40′ N. and longitude 96° 36′ W. It enters the Mississippi nine miles below the Falls of St. Anthony, in N. latitude 44° 53′ 49″ and W. longitude 93° 8′ 7″. Its length, following its meanders, is about five hundred miles, but in the direction of its immediate valley, does not exceed two hundred and seventy-five miles. Its course is exceedingly serpentine, varying from side to side of its valley, and is interrupted by several rocky ridges extending across the bed of the river, and occasioning falls of considerable descent. About fifteen miles from its source it passes into Big Stone Lake, which is about twenty-five miles long, and from four hundred yards to one mile and a half wide, lying in a direc-

tion corresponding with the course of the river. Near the lower extremity of the lake is an island of considerable size, inhabited by a pretty numerous band of the Sioux. Twenty-five miles lower down it enters Lac qui parle, which is a handsome little lake seven and a half miles in length, and whose breadth does not exceed one mile. It receives from the west several small tributaries, the most considerable of which are the Blue Earth, the Liard, or Cotton-wood, the Yellow Medicine rivers, and the Spirit Mountain rivulet, all of which take their rise in the Coteau des Prairies. Its proximity to the Mississippi precludes any room for tributaries of any considerable size from the eastward, for a distance of more than two hundred miles from its mouth, above which it receives two streams of respectable size, viz. the Epervier and the Medicine Bark, the latter of which rises near Otter-tail lake and the river de Corbeau, and enters about sixteen miles below the Lac qui parle.

During the spring freshets, and at other times when floods prevail, the St. Peter is navigable for Mackinaw boats and pirogues, from its mouth to the head of Big Stone Lake, there being but two obstructions that are impassable on such occasions, viz. at Patterson's Fall and the Grand Portage, at which are carrying places or portages of moderate length. For a distance of about forty miles on the lower part of the river it is from sixty to eighty yards wide only, and navigable for pirogues and canoes, in all stages of the water; higher up, its navigation is obstructed in low water by numerous shoals and rapids.

The only tributaries worthy of notice are the Blue Earth, the Liard, improperly called White-wood, the Red-wood, or more properly Red-tree, the Yellow Medicine, the Beaver, and the Spirit Mountain rivers, all head-

ing in the Coteau des Prairies, entering from the west, also the Epervier and Miawahkan or Medicine Bark, from the north-east; the latter of which rises in the vicinity of Otter-tail Lake, to which it is said to be navigable for canoes in a wet season, and is the same that has often been denominated Chippewa river. Of these streams the Blue Earth is the most considerable, its sources interlocking with waters tributary to the Missouri, in a district of country, where the Coteau des Prairies is said to have its southerly termination. The others are all of inconsiderable magnitude, as may be readily inferred from the description already given of the principal.

The country of the St. Peter possesses many features highly interesting both in a geological and agricultural point of view. Its physical character and structure, as also those of the other regions treated of in this paper, have been discussed in the course of the preceding narrative. In regard to its soil and aspect, much may be said in its praise. The immediate valley of the river has an average width of about one mile and a half, and is connected by bluffs or parallel ranges of hills, which attain an elevation of about one hundred feet. The lower portion of the valley, embracing nearly one-half the length of the river, is low and marshy, subject to inundation, and abounding in lakes, swamps, and lagoons. Nevertheless, it sustains in many places a dense and heavy growth of trees, consisting principally of oak, elm, white maple, ash, linden, white-walnut, wild-cherry, &c. together with a luxuriant undergrowth of shrubbery, vines, grasses, and weeds. The neighbouring highlands present numerous copses and groves of considerable magnitude, containing several of the trees before enumerated. Prairies are frequent, and some of them spacious, on this part of the river,

both in the valley and upon the adjacent highlands, so that forests of any considerable extent are entirely excluded.

On the upper part of the river the valley assumes a different character, expanding in some cases to the width of two or three miles, and embracing extensive tracts of rolling or level prairies. The bottoms are more elevated, and seldom give place to swamps or ponds. The woodlands become less frequent, and the prairies more extensive, till at length all that appears of the former are mere skirts fringing the water-courses.

The uplands on both sides of the valley are of a rolling aspect, in some instances inclining to hilly; rocks occasionally appear upon the surface, but are no where abundant. The stratifications, on which the country is based, consist of secondary sand and limestone, perforated in several places, towards the head of the river, by peaks and ridges of primitive rock, which rise twenty or thirty feet above the water-table of the country. The aggregate descent of the St. Peter may be estimated at about one hundred and fifty feet,* the general level of the country at its source having an elevation of about eighty feet above the river.

On retiring from the river in either direction the country becomes undulatory, but no hills remarkable for their magnitude occur, till we arrive at the Coteau des Prairies, on the west, and at the Pine ridges, &c. which are represented as the birth place of the waters of the Mississippi, on the east. The height to which these last attain is said to be inconsiderable; they do not probably rise more than a few feet above the general level above mentioned.

* In vol. 1. p. 364, the descent of the St. Peter was from general considerations estimated at sixty feet, but Major Long is of opinion that one hundred and fifty feet accords better with known facts in relation to the descent of water-courses.

The Coteau des Prairies is a very remarkable feature in the aspect of this region, situated between the waters of the Mississippi and those of the Missouri. It may be regarded as the dividing ridge between those waters, and is doubtless the grand dike which has obstructed the latter in its progress eastward, and caused it to flow southwardly through a distance of many hundred miles, before it could again resume a direct course to the former. This huge swell has an elevation of about one thousand feet above the common level of the country just described, and extends from the 44th degree of latitude, in a direction north-northwest to the sources of Pembina river, in latitude 49° north. It presents a rounded summit, with but few irregularities of surface, and is for the most part destitute of a woody growth. Its easterly slope exhibits a gradual declivity, intersected at intervals, by ravines which serve as channels to numerous streams, that pay tribute to the St. Peter and Red rivers. The distance from Lake Travers to the base of the Coteau, is about twenty-five miles in a westerly direction, while that to its summit is said to be more than double that distance. Its width, character of its western slope, &c. could not be satisfactorily ascertained. It is said, however, that this ridge is succeeded by another, parallel to it and of a similar appearance, at the distance of thirty or forty miles, between which and the first is a river of moderate size, probably Jacque or James river of the Missouri. It is further stated also, that the western declivity of these ridges is considerably less than the eastern, which is in accordance with the deductions to which the hydrography of the country give rise. At both extremities the Coteau loses itself in a multiplicity of hills and swells, which give to the country an aspect highly varied.

V. *Of Red river and the adjacent country.*

This stream is tributary to Lake Winnepeek, whose waters have their estuary in Hudson's Bay. Its immediate source is Lake Travers, situated northwardly, and within three miles of Big Stone Lake, and in flood time, communicating at its upper extremity with the St. Peter's river, which is here a mere brook, and passes the lake at the distance of a few hundred yards only. This lake is about fifteen miles long and between one and two wide, stretching from south-west to north-east. By observations taken at the establishment of the Columbia Fur Company, situated two miles from the head of the lake, its latitude was found to be 45° 39′ 52″ and its longitude 96° 34′ 30.″ At the north-eastern extremity of Lake Travers, is situated a pool of considerable size called Buffalo Lake, communicating with the former. The channel through which these are drained is denominated Riviere des Sioux, or more correctly Swan rivulet, and is about thirty miles long. At the time of our passing it, (Aug. 1823,) it contained no water except in stagnant pools. At the distance abovementioned it unites with a considerable stream from the north-east, called Grand or Otter-tail river, which has its source in a lake of the same name. The lake is about twenty-four miles long and five broad, and is situated near the head waters of the Mississippi, at the distance of about one hundred and fifty miles north-eastwardly from Lake Travers. These two streams may be regarded as the constituents of Red river. The general course of the river is northward, inclining a little to the west; it is exceedingly tortuous; its length, following its meanders, being more than five hundred miles, while in the direction of its valley it does not exceed three hundred and sixty. It receives numerous tributaries, of which the following are the prin-

cipal, and enter it in the order here mentioned, commencing with the uppermost, viz.

The Pse or Rice river, the Shienne, the Buffalo, Elm, Wild-rice, the Plum and Sandhill rivulets. The Goose river, the Red Fork, the Turtle, Big Saline and Park rivers, the Swamp brook, the "Two rivers," and Pembina river, all within the territory of the United States. The Reed Grass, Scotchman, Rat, Muddy, Assiniboin, and Death rivers, entering northwardly of the 49th degree of north latitude. The localities of their heads, their connexion with other waters, their relative extents and consequently their magnitudes, will be more readily understood by a reference to our narrative.

Red river is navigable for canoes, and even pirogues of two tons burden, from its mouth to its source, as also to the sources of several of its tributaries when swollen by freshets. On such occasions canoes have been known to pass from Lake Travers, its source, into the St. Peter, and back again, without inconvenience. The voyage down the river is now seldom performed, owing to the limited nature of the trade in this direction. Formerly the Hudson's Bay company had a trading establishment on Lake Travers, (the same that is now occupied by the Columbia Fur Company,) between which and their establishments lower down the river, considerable intercourse existed. It abounds in rapids, which, together with its numerous and extensive windings, render the passage by water very tedious.

The aggregate descent from Lake Travers to Lake Winnepeek, or from the source to the *debouchure* of Red river, a distance of about six hundred miles, following the meanders of that stream, amounts probably to two hundred feet.

Otter-tail river is navigable as above to its source, through which a water communication is continued forming a con-

nexion with the Riviere de Corbeau of the Mississippi, and the Medicine-Bark of the St. Peter. The Wild-rice river and the Red Fork are connected in the same manner with other sources of the Mississippi, affording navigable communications between the subsidiary lakes at their respective heads, and others tributary to that great river. Reed Grass river has a two-fold connexion with other waters, serving as a channel of intercourse between Red river and the source of the Mississippi, as also that of one of the tributaries of Rainy river. Rat river also affords a communication between Red river and the Lake of the Woods. These several communications are only practicable in very wet seasons, and the transition from their summits into other waters, is interrupted by portages of greater or less extent, but in no instances by ridges of any considerable height.

The Goose and Turtle rivers, both of which take their rise in Devil Lake, are navigable to that place, and the lake itself, which is said to be made up of a multiplicity of small pools, connected by navigable channels, affords an extent of navigation of about one hundred miles.

The Assiniboin river is the largest of all the tributaries of Red river, and in point of magnitude and extent, vies even with the principal. Their point of junction is in north latitude 49° 53′ 35″ and west longitude 97° 00′ 50″. Its sources mingle with the waters of the Saskatchawan, north-westwardly from the point just mentioned. In its progress downward, it forms an extensive curve with a convexity to the south-west, and receives numerous subsidiaries, among which is a stream of respectable size, called Mouse river, that is said to receive some of its waters from a point within one mile of the Missouri river. The Assiniboin is navigable at all stages of the water to a great distance, and is the channel of continual intercourse be-

tween several British trading establishments located on its waters, and one of their principal depots situated at the mouth of the river.

The immediate valley of Red river is not bounded by parallel ranges of bluffs or banks like that of the St. Peter and other tributaries of the Mississippi, but expands to a great width, terminated on the west by highlands connected with the Coteau des Prairies, and on the east by the ridges and swamps in which the waters of the Mississippi, St. Lawrence, and Nelson's rivers find a common origin. A broad expanse of verdant prairie, spreading beyond the utmost extent of vision, is here presented to the view. If we except the margin of the river and those of its tributary streams, which are fringed with trees and shrubbery, there is very little to interrupt the simplicity and uniformity of the scenery; scarcely is there an undulation to variegate the prospect, save what is afforded by an optical illusion that makes the traveller fancy himself in the centre of a basin, and surrounded by an amphitheatre of rising ground at no great distance, which constantly eludes his approach.

The soil is generally thin, of a light complexion, and argillaceous structure. The dwarfish appearance of the herbage which it supports, especially on the upper portion of the valley, indicates either a want of fecundity or the admixture of salts or other ingredients not congenial to vegetation. In many places, however, the soil appears rich, supporting a dense and luxuriant growth of grass, weeds, &c. As we descend along the river, the indications of fertility multiply, the soil becomes deeper and the vegetation more thrifty, woodlands become more frequent, and the trees attain a larger size.

The flatness of surface that almost uniformly prevails throughout the valley of Red river, may be regarded as a defect in its natural character that cannot easily be remedied.

The colony planted by the Earl of Selkirk occupies two positions on the banks of this river, one at the confluence of the Assiniboin, usually called Fort Douglas, and the other about sixty miles above, called Pembina. The amount of population at both places, exclusive of those in the immediate employ of the Hudson's Bay Company, does not exceed one thousand souls, about three hundred of whom, principally *metifs* of French and Indian extraction, reside at Pembina, within the limits of the United States. This village is situated on both sides of the river, at the distance of about two miles below the mouth of Pembina river. The settlements at the confluence of the two rivers above mentioned, are scattered through a considerable tract of country embracing an extent of about twenty miles along the bank of Red river; here are two stockade works, viz. Forts Gerry and Douglas; the former called the Hudson's Bay Company's fort, and the latter the Colony's; also the remains of two others of a similar character, one Catholic chapel, and one church for Protestant Episcopalians; a more particular account of which has been given in the preceding narrative.

Agriculture has been commenced at both these places, and is attended with success. Wheat, barley, millet, pulse, together with potatoes and other culinary roots, have been cultivated to great advantage. Maize is cultivated in small quantities, but, at best, it is of a very stinted growth, and affords a very scanty and uncertain crop. Black cattle have been lately introduced, and succeed well. As yet they have no sheep, and but few swine; of the success of the latter there can be little doubt, however the climate may counteract that of the former. Their horses are hardy, which is almost the only excellence they possess; the services of this animal in the sledge are superceded by the

use of dogs, which are here among the most useful of domestic animals.

The region granted to the late Lord Selkirk, and called Ossiniboia, has the following limits, viz. "Beginning on the western shore of the Lake Winipic, at a point in 52° 30′ N. latitude, and thence running due west to the Lake Winipigashish, otherwise called Little Winipie, thence in a southerly direction through the said lake, so as to strike its western shore, in latitude 52°, thence due west to the place where the parallel 52° intersects the western branch of Red river, otherwise called Assiniboin river, thence due south from that point of intersection to the height of land which separates the waters running into Hudson's Bay from those of the Missouri and Mississippi rivers, thence in an easterly direction along the height of land to the source of the river Winipie, (meaning by such last named river the principal branch of the waters which unite in the lake Saginagas,) thence along the main stream of those waters and the middle of the several lakes through which they pass to the mouth of the Winipie river, and thence in a northerly direction through the middle of the Lake Winipie to the place of beginning, which territory is called Ossiniboia," or Assiniboia.

The 49th parallel of north latitude, which is the northern boundary of the United States, crosses Red river at a point so far down, as to include within the limits of our territory all the village of Pembina, with the exception of two or three cabins. The boundary is designated at this place by an oaken post, erected by the exploring party, which stands on the west upland bank of the river within a few paces of the brow of the bank, with the letters U. S. inscribed on the south, and G. B. on the north sides of the post.

VI. *Of the country between Lakes Winnepeek and Superior.*

The hydrography of this region is as yet very defective, and although it may be traversed in a thousand directions, must forever remain so, if the shape, magnitude, and position of innumerable lakes embosoming myriads of islands, and the courses, sinuosities, and declivities of countless channels by which they are united, are deemed essential as rudiments of that science. The country is literally a wilderness of lakes, islands, and peninsulas; a mazy waste, so inhospitable and irreclaimable, as to mock the art and enterprize of man, and bid defiance to his industry.

The water route most frequented between the Lake of the Woods and Lake Winnepeek, is denominated Winnepeek river, which enters the lake last mentioned in latitude 50° 36′ 30″, and has an extent of about one hundred and seventy miles. It is composed of a series of deep and broad basins rising one above another, and serving as the channel of a huge volume of water, which is precipitated from one basin to another in tumultuous cataracts of the most romantic character. Of these water falls, there are no less than thirty-one in the route above mentioned, which interrupt the passage of canoes, and at all of which are carrying places. The aggregate descent of water in Winnepeek river may be estimated at four hundred and ten feet, which may be considered as the elevation of the Lake of the Woods above Lake Winnepeek. The route by Covert and Sturgeon Dam rivers is probably the most direct, (the lower portion of which is the same with that above mentioned,) but the obstructions are said to be more numerous and formidable, especially in a low stage of water. Besides these there are numerous other deviations from the main

route, some of which have been traversed, but the number that remains to be explored is doubtless far greater.

At the distance of about sixty miles below the Lake of the Woods, Winnepeek river receives a large tributary from the north, called English river, which is of a character similar to that of the principal, and nearly as large as the latter above their junction. Its head waters interlock with those of Albany river, which empties into James' Bay, and is the principal channel of intercourse between Lake Winnepeek and the trading establishments on that river.

The Lake of the Woods is about seventy-five miles long, and of irregular widths, from ten to thirty-five or forty miles. Compared with other lakes, it deserves a high rank on the scale of beauty. The scenery is wild and romantic in a high degree, its shores being faced with precipices and crowned with hills and knobs of variable heights, clad with a dense foliage of shrubbery and evergreens. Its surface is beautifully studded with countless islands of various sizes and forms, disclosing between them the continued sheet of its wide-spreading waters, the extent of which enlarges upon the vision as the traveller advances upon the lake, till the main land is shut out from the view by the islands that multiply around him.

The 49th parallel of north latitude crosses the lake within the distance of about twelve miles from its southerly extremity.

The region bordering upon the waters above described, is one of the most dreary imaginable. Its climate is rigorous, its surface exceedingly rugged and broken, and its products so limited and meager, that it seems never to have been claimed as a residence either by man or beast. A solitary moose, caraboo, or bear, is occasionally to be found;

and a half-starved family of savages sometimes fix a temporary residence upon some of the water-courses, and subsist miserably upon fish, but it seems as if comfort and competency were denied to both.

The prevailing rocks are primitive, and are almost exclusively the ingredients of which the hills are composed, while the earthy portions of the vallies are made up of the coarse and unproductive detritus afforded by their disintegration. The soil is uniformly thin, and in many places totally wanting. The stinted growth of the woodlands, and the dwarfish character of vegetation which prevail generally throughout this region, are attributable to these causes. The islands of the lakes and river are similar to the circumjacent highlands, being uniformly based upon rock and presenting rugged and broken surfaces.

The growth found on the lower part of the river, comprises only the aspen, white birch, spruce, tamarack, and scrub-oak, none of which attain any considerable magnitude. As we approach the Lake of the Woods, the following trees make their appearance, viz. two species of pine, called the white and red epinette, the former of which is more commonly called the larch. From the latter is extracted the gum employed for pitching canoes, which usually have their ribs and lining constructed of its timber; a small species of pitch pine called by the Canadians cypress, which also furnishes a gum inferior to that above mentioned; and the liard, a variety of the poplar, more commonly called the Balm of Gilead.

The undergrowth is dense in many places, and consists of stinted oak, chokecherry, hazle, pembina or bush cranberry, service-berry, arrow-wood, wild plum, raspberry, briar-bush, whortleberry, sumac, wild rose, sweet briar,

sand cherry, red and black cherry, pea-vine, gooseberry, currant, bear-berry, &c. &c.

Above the Lake of the Woods, Rainy river becomes the channel of communication, and extends one hundred miles to the lake of the same name. It has an average breadth of about three hundred yards, is deep and gentle, and has no obstructions to its navigation, within forty-eight miles of its mouth; at this distance are situated the rapids of Rainy river, which are about one mile long, and have an aggregate descent of about ten feet. About ten miles further up is another inconsiderable rapid, with a fall of three feet. At the outlet of Rainy Lake is a rapid of about five feet descent, and two miles and a half below are the Falls of Rainy river, down which the torrent pours with terrific grandeur through an aggregate descent of twenty-five feet in the distance of but a few yards. At this place are situated an establishment of the Hudson's Bay Company on the north side of the river, and one belonging to the American Fur Company on the south. Twenty miles below the falls is the entrance of a considerable tributary from the south-west called the Grand Fork, which affords a channel of communication between the principal and Little Winnepeek Lake of the Mississippi, navigable in wet seasons. It receives several other streams of less note. Between the Lake of the Woods and Rainy Lake there is another water route which is sometimes travelled; it is delineated on the map as the back route.

The contrast between the country of Rainy river and that before described is no less striking than that between the two water-courses themselves. Here bottoms and table lands of considerable extent are often to be met with, wearing the aspect of a secondary region; these are, however, generally terminated, at no great distance, by tracts

of a rugged and broken character. Rocks are seldom to be found in the immediate valley or bed of the river. The forests are more dense and heavy, and contain several trees not enumerated in the foregoing list, viz. white-oak, ash, hickory, water-maple, white-walnut, linden, elm, &c. The pine and white-birch become more abundant, and attain a more stately size.

From the estimates above given, making some allowance for the general descent of the river, it will appear that the surface of Rainy Lake is elevated about sixty feet above that of the Lake of the Woods, or four hundred and seventy feet above that of Lake Winnepeek.

Pursuing our course upwards we passed through Rainy, Sturgeon, La Croix, Upper Sturgeon, Doré, Cannibal, and Thousand Lakes, besides numerous others of less note and size, and also the channels by which they are connected, which, in the language of the voyagers, are denominated rivers, and known by various names, before we reach the dividing ridge between the waters of Lakes Winnepeek and Superior. Several routes are practicable through this part of the country, but the one we pursued is said to be the most frequented. The route connected with the Grand Portage, which was the only route frequented till within a few years, is united to the new route by two channels, one branching off at Lac de la Croix, and the other at Upper Sturgeon Lake, both of which unite in Lake Saganaga, and enter Lake Superior at Pigeon river.

The country along these routes is very similar to that on Winnepeek river, though of an aspect somewhat more inviting. Patches of ground susceptible of cultivation, here and there present themselves. The trees of the forest exhibit a greater variety, and attain a larger size; as we approach the dividing ridge between the waters of Lake Su-

perior and those of Hudson's Bay, tracts of flat and marshy lands become more numerous and extensive, and in the immediate vicinity of that limit the country appears to be formed almost exclusively of swamps, quagmires, and stagnant pools. The swamps sustain a growth of spruce, epinette or larch, and some pine, exceedingly dense, and in many places rendered almost impenetrable by a profusion of furze and bushes.

The lakes of this region are of all possible shapes, exceedingly numerous, and thronged with islands. As on the route before described, the lakes here rise one above another in continual gradations, but less abruptly, giving an altitude to the uppermost on the route at least equal to one hundred and thirty feet, making the entire elevation above Winnepeek about six hundred feet.

The altitude of the dividing ridge, above the water-table of the adjacent country, is no where greater than about one hundred and fifty feet, the head waters of the streams tributary to Hudson's Bay being somewhat more elevated than those of Lake Superior.

The channel of communication thence to Lake Superior, is through Dog river, the lower portion of which is more commonly called the Kamanatekwoya. This river is exceedingly serpentine in its course, has a regular bed, and a rapid current. About forty miles below the point where we entered it, is a lake of the same name, about twelve miles long and from one to five broad. The river receives several tributaries, the most considerable of which is the Cypress, entering from the west above Dog Lake. Two others, (names unknown,) one of which enters Dog Lake from the north-east, and is said to communicate with the English river before noticed, and the other into the south-west part of the same lake, affording a communication with

the Thousand Lakes, which is sometimes travelled; besides these there are two others of considerable size from the west, one called Mataway sha-boon-da-wan or Long lodge river, connecting, like the last mentioned, with the same lake and the other White-fish river, through which there is a route for canoes, communicating with the Grand Portage route, it is however seldom travelled.

On this route the portages are equally as numerous, and more extensive than on the other, nor are its other impediments less formidable. Rapids and cataracts abound; among the latter is one of the most magnificent cascades to be witnessed in any country, it is denominated by the Indians, the Falls of Kakabikka or Cleft rock, and is situated about thirty miles upward from the mouth of the river, which is here contracted to the width of about fifty yards, and supplied with a volume of water unusually large for that width. Thus confined, the whole body of the river is precipitated, in a dense sheet, down a perpendicular precipice more than one hundred and thirty feet into a deep chasm, bounded by perpendicular cliffs of the height just mentioned; the banks of the river, for a distance of nearly one-half of a mile below, are completely insurmountable, rising perpendicularly, and in many places overhanging their bases. The chasm throughout this distance, is no wider than is necessary to give free passage to the water, which is mantled with foam and hurried down with great rapidity. This scenery, although it is less extensive, yet vies in grandeur and sublimity with that of the Falls of Niagara. In beholding it, the spectator is inspired with equal awe, the principal features are equally terrific, while the deep intonation, which is not only heard but felt at the distance of four or five hundred yards, is more sensible than that of its rival, and has a nearer resemblance to the roar of dis-

tant thunder and the rumblings of an earthquake. Below the Falls of Kakabikka, the river presents a continued rapid for the distance of about twenty miles, below which it quietly passes through serpentine folds to its mouth, which is in an arm of the lake called Kamana Bay. The whole descent of the water from Coldwater Lake, (the first water eastward of the dividing ridge on our route,) to Lake Superior, may be estimated at about six hundred feet.

The country on this part of the route is somewhat more inviting than any other part of the region now under consideration. Bottoms of considerable extent frequently occur, but in the upper portion of the river they are low and subject to inundation. The high lands are less broken, rising to the height of one hundred and fifty or two hundred feet. As we descend, the country becomes still more interesting, exhibiting many indications of an exuberant soil. The growth is similar to that before mentioned, with the addition of the fir and white pine, which occasionally present themselves. The liard becomes more stately and plentiful, and the trees generally attain a much larger size. A dense undergrowth of shrubbery, vines, and bramble, prevails. These, together with other indications which might be enumerated, seem to distinguish the valley of this river as the future residence of civilized man.

Near the mouth of Dog river is situated Fort William, formerly the principal depot of the North-west Company. This site was selected as being more eligible on some accounts, than that of Fort Charlotte at the mouth of Pigeon river on the Grand Portage route, which was consequently abandoned. The circumstance of the latter site being contiguous to the line of demarkation between the territories of Great Britain and the United States, no doubt had considerable influence in bringing about this measure.

The country on the north of Lake Superior, both in regard to aspect and character, bears a strong similitude to that of Winnepeek river. The growth is generally stinted, and consists principally of cedar, spruce, white and yellow birch, liard, aspen, scrub oaks, alder, &c. The lake coast is indented with numerous bays and inlets, and presents an uninterrupted succession of hills, based upon rocks, and faced with precipices. The hills are generally from one hundred and fifty to four hundred feet high; there are several, however, in the vicinity of Fort William, considerably higher, among the largest of which are Fort William Mountain and Thunder Point, rising five or six hundred feet above the lake. These appear to be the remains of a slaty formation which once covered the neighbouring country, and which still appears at the Falls of Kakabikka, forming the precipices of that interesting spot, and at various other places.

Isle Royale, which is the largest island of Lake Superior, is about fifty miles long and from two to six broad, and is surrounded by a multiplicity of small grassy islands. It is situated off Kamana bay, between which and the island is a cluster of small islands, called the Paté or Pie islands, based upon rock, of a turretted form, flat upon their summits, and elevated between two and three hundred feet. Between Kamana and Michipicotton bays, the margin of the lake is thickly studded with islands and peninsulas, the shores of which are invariably rocky-bound and precipitous. Michipicotton Island, situated at the entrance of the bay of the same name, is second in magnitude to Isle Royale. The other islands of the lake are inconsiderable in point of size. Eastward of Michipicotton bay, sandbars occasionally present themselves, connected with small islands and tracts of flat land, interposed between the hills

and margin of the lake. Westward of the same point no sand banks are to be met with, except occasionally at the *debouchures* of the larger streams. Small parcels of tillable ground are occasionally to be found along the coast, but they occupy but a very inconsiderable portion of the surface. Agreeably to the best intelligence that could be had, the country back of the lake, to the distance of fifty or sixty miles, is very similar in aspect and character to that in the vicinity of the lake.

On the southerly coast, we have no information more authentic than that furnished by Mr. Schoolcraft in his narrative of Governor Cass' expedition, from which we should infer, that a region equally as unproductive and inhospitable is there presented.

In concluding our observations relative to this part of our route, we would remark generally, that no part of the country can ever admit of a dense population, if we except perhaps the valley of Rainy river, which is of no very considerable extent. The most favourable estimate of its future population, founded upon present appearances, would not admit of more than a single soul to every thousand acres of country. Yet, notwithstanding the rudeness of its aspect, the severity of its climate, and the sterility of its surface, it is possessed of some features grateful and interesting in a high degree. No country can boast of a greater variety, beauty, and grandeur of water scenery. In the few places where agriculture has been attempted and found practicable, wheat succeeds well. Potatoes grow to great perfection. Turnips, beets, and other culinary roots are raised to great advantage, and onions, notwithstanding the shortness of the summer, attain their full size in a single season.

It may be thought that this chapter ought to contain

some general account of the great northern lakes, but we are constrained to evade this subject, on account of the limited nature of our intelligence in relation thereto, and more especially, because a description far more complete and satisfactory may shortly be expected, as the result of the labours and researches of the Commissioners employed in determining the boundary line between the United States, and the territory of Great Britain. We shall therefore merely remark on the present occasion, that throughout the Lakes Erie, Huron, St. Clair, Michigan, and Green Bay, and the several straits by which they are connected, there exist no impediments to steam-boat and sloop navigation, unless the want of safe and commodious harbours, which generally prevails, be considered as such. The passage into Lake Superior is effectually obstructed by a rapid, denominated the Sault of St. Mary, down which there is a descent of nearly twenty feet, in the distance of four or five hundred yards. But the facility with which a canal or side-cut of any appropriate dimensions can be formed, seems to divest this strait of every formidable character, and place it completely under the control of art. The surface of the ground through which a canal may be cut rises no more than five or six feet above Lake Superior, and the distance does not exceed thirteen hundred yards.

VII. *Remarks on a variety of subjects connected with the topography of the country.*

1*st.* Of the natural features of the country in a military point of view.

In this view it is proper to comprehend not only the extreme northerly frontier of the United States, but to con-

sider it in connexion with the boundary which nature seems to have fixed as the western limit of our population, viz. the Great American Desert. From what has been stated in relation to the country surrounding Lake Superior and extending north-westwardly to Lake Winnepeek, it may be inferred that we shall always remain secure from the inroads of any regular hostile force in that direction. Indeed the nature of the country is such as affords a more formidable barrier to the invasions of an enemy than any *cordon* of posts that art could devise. This barrier is intercepted by a space of considerable extent, including the valley of Red river, and extending westward to the Great Desert, through which there are two considerable passes, the one by way of the Red and St. Peter rivers, and the other by that of the Assiniboin and Missouri, through which an enemy from the north might gain access to the heart of the western country. But when we consider that the policy of the Hudson's Bay Company, in whom is vested the right of soil to all that part of the British possessions drained by the tributaries of Hudson's Bay, is opposed to the colonization of their territory, their interest prompting them to foster the fur trade, the products of which must diminish in proportion to the increase of population, we have very little to apprehend from the attack of a powerful enemy in that quarter. Added to this the utter impracticability of transporting by ordinary means heavy ordnance, and other munitions of war, up Nelson's river, or by any other route, to the valley of Red river, must for a long time to come place an enterprize of this nature beyond the reach of any hostile power. Accordingly, under present prospects, no hostilities are to be apprehended in that part of our frontier, except such as may be inflicted through the medium of the savages. A large portion

of the Great American Desert, a sterile dreary waste, three or four hundred miles in width, stretching along the eastern verge of the Rocky Mountains, from Red river of the south to Athabasca in the north, a distance of more than fourteen hundred miles, may be added as a continuation of the line of our natural defence. Thus a portion of our frontier, embracing an extent of nearly two thousand miles, is so well fortified by nature as to require no artificial structures but such as are appropriate in Indian warfare. No regular military works will of course be required on that extent of frontier, except such as may be required to protect the American fur trade, and counteract the hostile purposes of the Indians.

Before we dismiss this subject, we would remark, that the strait of Mackinaw, (Michilimachinack,) presents itself as one of the most important passes to an extensive interior coast, and indirectly to the very vitals of the western country that is any where to be found westward of the Alleghany Mountains. By means of this channel the whole coast of Lake Michigan, embracing an extent of more than six hundred miles, is open to the attack and depredations of any regular force that might be disposed to wage hostilities in that direction. Whereas if the entrance into Lake Michigan through this pass, were effectually guarded by a chain of military works stretching across the straits, at or near the island of Mackinaw, any future danger to be apprehended in that quarter, would be effectually obviated, and it would no longer be necessary to maintain garrisons at Green Bay, Chicago, and other points on the lake, except for the purpose of restraining the Indians and securing the frontier against their attacks. The practicability of establishing a line of works that would effectually command the passage of the straits, has not yet been

proved; no doubts are entertained, however, that such an object is attainable.

The importance of this pass appears the more striking, when viewed in connexion with the easterly arm of Lake Huron, which extends far into the interior of Upper Canada, and to which munitions of war and naval stores of every description may be easily conveyed from the depots of both Canadas. An enemy designing to attack the western country might here prepare an armament in complete security, and operate to great advantage through the straits. Not only the practicability, but the efficacy of an attack in this direction, has been fully demonstrated in some of the events of the late war.

2d. Of the Indians inhabiting the country traversed by the Expedition.

A few remarks on this subject, in addition to those heretofore made in the narrative, will here suffice.

The march of civilization, which has been carried triumphantly nearly to the sources of the Scioto, Miami, and Wabash, has been almost uniformly attended by the retreat of the nations formerly inhabiting in that quarter. The Shawnees, Delawares, Miamis, Potawatomis, and Kickapoos, who once overran the extensive region that now embraces the states of Ohio, Indiana, and Illinois, are now nearly extirpated; small remnants of these once powerful nations are scattered through the northerly and westerly parts of this region, all of whom begin to be convinced, that the lapse of a few years more must bring about their utter extermination, unless they resort to agriculture as a means of prolonging their existence.

A similar destiny awaits the Otawas, Menomones, Winnebagoes, Sauks, Foxes, and Iawas, who now inhabit the

countries of the Mississippi and Lake Michigan, northwardly of the 42nd parallel of north latitude. The numerous bands of the Dacota or Sioux nation, together with those of their irreconcileable enemies the Chippewas, are daily becoming less numerous and powerful, in consequence of an incessant warfare which has for a long time existed between those nations, and of the frequent hostilities that take place between them and other neighbouring Indians; and although they have at present but little occasion to be alarmed at the prospect of having their country wrested from them by a white population, yet their final extirpation cannot be viewed as an event very remote.

There can exist but little doubt, that most if not all of these Indians would, in any emergency decidedly favourable to their views, take up arms against the people of the United States. They have no calamity to dread so fatal to their repose, as that of the inroads of our population upon their territory, and no evil so much to be deprecated, and so pernicious to their welfare, as that of a free intercourse between them and a semi-barbarian race, often resident among them, and always ready to occupy the ground from which they have retreated. There is, however, no new occasion to enlarge upon this part of the subject, and we shall conclude with briefly stating, that the intercourse, between the citizens of the United States and the Indians, is of a nature calculated to vitiate and deprave the former, while it engenders distrust, malevolence, and hatred in the minds of the latter. In fine, the language held forth by the Indian in relation to the Americans is, that they have claim to no other feeling but that of abhorrence, and that it is from principles of policy, and not of esteem and reverence, that he treats them with deference,

professes friendship for them, and allows them to share in his confidence.

It may here be remarked, that the Indians westward of the Mississippi are, for the most part, addicted to an erratic life, migrating from place to place in quest of game on which they principally subsist. They are divided into numerous bands, each of which has its appropriate leader, and in all their movements they are prepared for any event whether of the chase or warfare.

The Chippewas, from the nature of the country they inhabit, are distributed into families rather than tribes, the general scarcity of game, and other necessaries of life, rendering it impracticable for them to dwell in large numbers at any one point. In the event of a war, several families unite in forming a martial force suitable for the occasion. They subsist principally upon fish and wild rice, the latter of which is very abundant in the region they inhabit, and would afford them a competent supply of food, were they sufficiently industrious in collecting it, and frugal in its expenditure.

However gloomy the prospect of the Indians, as it relates to the means in their own power of ameliorating their condition, we cannot forbear to entertain the hope, that the humane exertions made in their behalf by our government, and especially by charitable missionary institutions, will prove efficacious in promoting their welfare. The efforts of the Baptist Missionary Society, which have been particularly noticed in the preceding narrative, have been bestowed in a manner that promises great advantage to the unfortunate savage, and nothing seems wanting to secure unbounded success, but perseverance in the same benevolent course. In witnessing the striking change that has

been effected in the character and habits of Indian youths, during a short period of instruction in agriculture and the rudiments of an English education, we are irresistibly led to the belief that a brighter day may dawn upon our savage brethren, and that the shades of barbarism in which they have been so long enveloped will, ere long, give place to the cheering light and benign influence of civilization.

3d. Statements relative to the elevation of different parts of the country.

With the exception of those items of intelligence drawn immediately from the canal-surveys in New York and Ohio, all that can be said on this subject is of a speculative nature, and may be styled conjectures rather than statements. Under the article Mississippi, in the Edinburgh Encyclopedia, American edition, it is stated by the writer of that article, that the Ohio, at Pittsburg, has a greater elevation than Lake Erie by two hundred and sixty-five feet, which no doubt exceeds the true elevation by at least one hundred, if not one hundred and fifty feet, and we would rather assume the difference, viz. one hundred and fifteen feet, as a nearer approximation to the truth. From the surveys recently made in the state of Ohio, it would appear that the point at which the Ohio passes the plane coincident with the surface of Lake Erie, which has an elevation of five hundred and sixty-five feet above tide-water, is situated at no great distance below Wheeling in Virginia. Hence we must infer, that the descent of the Ohio, between Pittsburg and the point alluded to, is one hundred and fifteen feet, which is as great a descent as can fairly be attributed to that portion of the river, especially when we are assured by the documents relative to

the surveys in Ohio, that the descent between the mouth of the Muskingum and Cincinnati, a distance nearly double that of the portion just mentioned, is no more than one hundred and twenty-seven feet. Hence also we may assume six hundred and eighty feet as the elevation of the Ohio, at Pittsburg, above tide-water; and that the aggregate fall of the Ohio, below that place, is about three hundred and eighty feet, while that of the Mississippi, below the mouth of the former, is about three hundred feet. If we suppose the plane of Lake Erie extended westwardly, its coincidence with the bed of the Illinois or rather of the Des Plaines, will probably take place at a point about twenty miles above the entrance of the Kankakee.* The same plane extended would intersect the Mississippi in or near the De Moyen rapids, probably at their head. The surfaces of Lakes Huron and Michigan may be regarded as having an elevation of six feet, and that of Lake Superior of thirty feet, above the plane above mentioned.

The writer above alluded to advances a doctrine, to the correctness of which we feel considerable reluctance in yielding our assent, viz. that the surface of the Gulf of Mexico is elevated one hundred and twenty-five feet above that of Chesapeake Bay, or in other words, that the gulf stream is occasioned in a great measure, if not exclusively, by a declivity in the Atlantic Ocean, corresponding to the velocity and direction of its current. Until the truth of this proposition be satisfactorily established, we shall content ourselves with the assumption that the level

* In Vol. II. page 382, of the Account of an Expedition from Pittsburg to the Rocky Mountains, a mistake has been committed, which we here take occasion to rectify. Instead of four hundred and fifty feet, which is there stated as the altitude of the head of the Illinois above tide-water, it should have been five hundred and fifty feet.

of mean tide is the same at the respective estuaries of the Mississippi, Hudson, and St. Lawrence rivers.

Agreeably to the authority above cited, the source of the Mississippi has an elevation of thirteen hundred and thirty feet, which may not greatly exceed the truth, yet we are inclined to think that twelve hundred would be a nearer approximation.

In order to simplify our ideas upon this subject, and exhibit them in a manner less prolix, we shall embody the several statements, made in this and the preceding articles of this paper, in a tabular form, with the view of introducing at the same time, the probable altitudes of other points relative to which no remarks have herein been made.

A table showing the probable altitudes, in feet, of the water level, at a variety of points therein specified, above tide-water.

Points indicated.	Elevation.
Mouth of the Ohio river - - - -	300
Ohio river, at Cincinnati* - - - -	414
Do. at the mouth of Scioto river* -	464
Do. at the mouth of Muskingum river*	541
Surface of Lake Erie,* River des Plaines, 20 miles above its mouth; Mississippi, at the head of the rapids De Moyen; and the Ohio a few miles below Wheeling, Virginia - - -	565
Lakes Huron and Michigan - - -	571
Lake Superior - - - - - -	595
The Ohio at Pittsburg; the Mississippi at the mouth of the St. Peter; and the Missouri at the mouth of the River Platte - - - -	680
Sources of the St. Peter and Red rivers -	830

Source of the Muskingum* - - -	902
Source of Big Beaver* - - -	907
Source of the Scioto* - - - -	919
Source of the Miami* - - - -	964
Lake of the Woods - - - -	1040
Rainy Lake - - - - -	1100
Sources of the streams on the route of the Expedition, tributary to Lakes Winnepeek and Superior, and head waters of the Mississippi - -	1200
Dog Lake - - - - -	1000
Lake Winnepeek - - - -	630

4th. Of the accompanying Map.

This document has been compiled principally from elements obtained during the progress of the Expedition. The astronomical observations and calculations, fixing the latitude and longitude of the several points, were made by Mr. Colhoun, astronomer, &c. for the Expedition, as recorded in the Appendix.

To the gentlemen of the Hudson's Bay Company we feel much indebted for the geographical information they gave us, as well as for the generosity and hospitality we uniformly experienced at their hands. The kind letter of the Right Hon. Stratford Canning, Plenipotentiary of his Britannic Majesty, at Washington, ensured us a most friendly and cordial reception among the officers and gentlemen of that company.

It will be perceived that the locality assigned to the southern extremity of Green Bay, and the direction of Fox river, one of its tributaries, also the shape of Lake

* The altitudes annexed to the several plans distinguished by an asterisk, are deduced from the measurements actually made in connection with the canal-surveys of New York and Ohio.

Michigan, are different from the representations usually given of them in other maps, which uniformly make the difference of latitude between Mackinaw and Fort Howard much too great; the actual difference, agreeably to the best information we could obtain in relation to the subject, being only about one degree. The alteration is to be attributed principally to this circumstance.

The delineations of that part of the Mississippi, situated above the Falls of St. Anthony, are copied from Pike's map of that river; those of the western part of Lake Superior, and the eastern part of Lake Huron, from Bouchette's Map of Upper and Lower Canada.

For a sketch of the surveys made in Michigan territory, from which we have made our delineations of the country along the west side of the straits between Lakes Erie and Huron, we are indebted to the politeness of Mr. H. S. Tanner, whose excellent maps of New York, Pennsylvania, Ohio, Indiana, and Illinois, we have consulted for information relative to the older parts of the country traversed by the Expedition.

To Dr. Bigsby, an English gentleman attached to the British commission for determining the boundary between the United States and the British possessions, we are much indebted for various items of geographical intelligence, relative to Lake Superior, Lake of the Woods, and the intervening country.

The southern coast of Lake Superior, together with the rivers, lakes, &c. situated between that lake and the Mississippi, has been delineated almost entirely from information kindly imparted by H. R. Schoolcraft, Esq.

The route of the Expedition is designated on the map by dotted lines and asterisks, the latter of which represent our places of encampment, and have the date annexed.

APPENDIX.

PART I.—NATURAL HISTORY.

§ 1. ZOOLOGY, BY THOMAS SAY.

A. CLASS POLYPI—ORDER VAGINATI.

CHONEMBLEMA.

Generic Characters.

POLYPIFER simple, lapideous, forming a somewhat irregular mass, and composed of parallel tubes. Each tube contains a series of inserted, infundibuliform diaphragms, constituting a continued siphuncle, which occasionally inosculates, through the parietes of the tube, with the siphuncles of the proximate tubes.

Observations.

By the general character of this interesting fossil, it might seem to be, in some degree at least, allied to the genus FAVOSITES of Lamarck, but it is widely distinguished by the extraordinary conformation of the interior of the numerous tubes of which it is composed. The diaphragms, unlike those of FAVOSITES, may be compared to a series of funnels inserted into each other and connected together by their siphuncular terminations, their superior peripheries being so expanded as to join the inner walls of the tube, thus interrupting the caliber of the latter into numerous

cells. This arrangement of the interior of the tubes is not unlike, in principle, to that of some of the multilocular shells, such as SPIRULA for instance, but the diaphragms are less symmetrical and of a more acute concavity. The communication between the neighbouring tubes is another remarkable character of this fossil genus, which, however, it possesses in common with FAVOSITES and a few other genera, but these lateral openings are few in number, and do not seem to exhibit any regularity in their distribution. Linné would probably have placed this fossil in his genus MILLEPORA, but its proper situation in the modern system is probably next in order to FAVOSITES.

Specific Character.

C. *intricata.* Tubes cylindric, small, separated in the mass by nearly the distance of their diameters; siphuncle very obvious at the opening of the tubes on the surface, and placed on one side. Pl. 14, fig. 1, nat. size, *a.* magnified.

B. CLASS PISCES.

PLATIROSTRA EDENTULA, *Lesueur.*

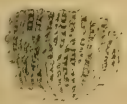
In addition to the detailed description by Mr. Lesueur, in the first volume of the Journal of the Academy of Natural Sciences of Philadelphia, the following characters may serve to complete the descriptive representation of this singular fish, as it appears in the living state.

Colour above livid-brown, immaculate on the body, but with small blackish spots placed in circles or ovals on the head as far back as the gill opening, on the upper part and sides of the rostrum, about the eyes and on the unwrinkled

2

Ampullaria depressa

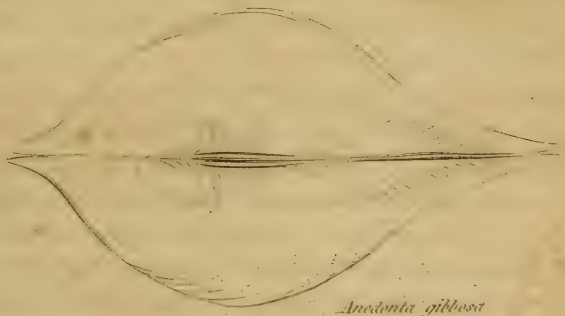
1



Chemnitzia intricata

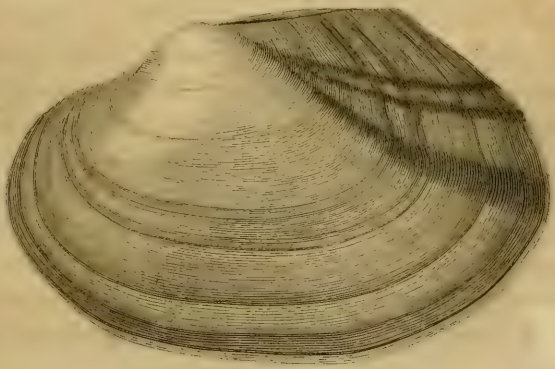
a

4



Anodonta gibbosa

3



part of the gill cover; over the upper jaw and on the wrinkled part of the gill cover, with abbreviated lines of small blackish spots; *belly* white, with a few spots on the middle; *fins* dusky, pectorals and ventrals white before and behind; *gill covers* capacious, broadly united beneath, and each side tapering gradually to a somewhat obtuse point which nearly attains to the line of the anterior origin of the ventral fins; on the upper basal portion of the gill cover, and extending for a short distance along the side of the head, the surface is wrinkled to permit the great dilatation of the part; *mouth* entirely destitute of teeth, or of roughness to the touch; *tongue* with large dusky spots; *jaws* within margined with dusky; posterior bone of the gill opening covered with papillæ pointing backwards; a yellow oblong-oval cartilaginous bone on the tail beneath the termination of the caudal fin.

Total length four feet eight inches.

Rostrum, from the anterior canthus of the eye to the tip, fourteen and a half inches.

In the above description we have endeavoured to state such characters chiefly, as could not be drawn from the dried specimens, and that have therefore been hitherto wanting.

In the gills of this fish were several Lamprey Eels, (Petromyzon,) of a small species. The Paddle-fish is frequently seen to leap out of the water in the manner of the Sturgeon. They grow to a somewhat larger size than the measure above recorded. The Polyodon of Lacepede we have not seen.

C. CLASS MOLLUSCA.

The shells described in the following pages constitute but a small portion of the collection obtained during the expedition. Those collected on St. Peter's river were packed in a box, and intrusted to the men who returned in canoes to Fort St. Anthony; this box has not yet been received, and is supposed to be lost. On the subsequent part of the route I put all the univalves collected, in a canteen which I constantly carried, but which was finally lost at Mackinaw. Another parcel of shells sent from Chicago has not since been heard of. To this statement of our losses I may add a still more important one, consisting of a box which contained skins of quadrupeds, birds, reptiles, and fishes.

HELIX.

1. H. *harpa*. *Shell* conic, reddish-brown; *whorls* four, convex, with numerous elevated, subequidistant, equal, lameliform, acute lines across, the interstitial spaces flat and wrinkled; *aperture* suborbicular, truncated by the penultimate whorl, and very little oblique; *labrum* simple; *umbilicus* small, nearly concealed by the base of the labrum.

Length rather more than one-tenth of an inch.

Inhabits the North-west Territory.

The elevated lines on this shell give it a very handsome appearance, and readily distinguish it from any of our native species that I have seen. The European analogue is the *aculeata* of Muller, but our shell is destitute of recurved points on the lameliform lines. Pl. 15, fig. 1.

2. H. *porcina*. *Shell* depressed, yellowish-brown; *epidermis* rugose, with minute, very numerous bristles; *whorls* rather more than four, depressed above, beneath rounded, forming a very obtuse angle rather above the centre of the whorl; *umbilicus* open, rather small, profound; *labrum* simple.

Breadth rather more than three-tenths of an inch.

Inhabits North-west Territory. Pl. 15, fig. 2.

3. H. *fraterna*. *Shell* convex, brownish-horn colour, minutely hirsute; *whorls* five, rounded; *umbilicus* partially or entirely closed by the termination of the labrum; region of the umbilicus indented; *aperture* much contracted by the labrum; *labrum* reflected, white, unarmed; its outer edge not projecting beyond the curve of the whorl; its inferior angle extends to the centre of the base of the shell; *labium* with a strong, prominent, oblique, compressed, white tooth.

Breadth one-third of an inch.

Inhabits Pennsylvania.

I obtained a specimen of this shell several years ago, but supposing it to be an accidental variety of the *hirsuta*, I laid it aside without further notice. Since then, however, Messrs. Hyde and Mason have presented numerous specimens of the same species to the Academy, having found it rather common; I therefore no longer hesitate to consider it as a distinct species. It resembles HELIX *monodon* of Mr. Racket, (Trans. Linn. Soc. Lond. vol. 13, pl. 5,) in the conformation of the aperture, but that shell is represented as being largely umbilicated, and its labrum does not extend near to the centre of the base, as it does in our species. Pl. 15, fig. 3.

4. H. *diodonta*. *Shell* somewhat depressed; *spire* convex, very little elevated; *whorls* five, rounded, regularly

but not prominently wrinkled, and grooved transversely; *aperture* moderate; *labrum* reflected, with a slightly projecting dentiform callus near the base on the inner edge; *labium* with an oblique tooth on the middle; *umbilicus* rather large, profound, exhibiting all the volutions.

Breadth rather more than seven-tenths of an inch.

This shell inhabits the state of New York. It is closely allied to H. *profunda* nob. but may be distinguished by its smaller size and armed labium. Its aperture also is much less dilated than that of the *profunda*. Pl. 15, fig. 4.

H. *perspectiva* nob. is common in the North-west Territory, it varies in being smaller, and in the circumstance of the labrum embracing a somewhat smaller proportion of the penultimate volution.

H. *arborea* nob. common in this territory.

H. *chersina* nob. A variety of this species is not uncommon in the North-west Territory. It differs in the greater rotundity of the upper part of each whorl, and in the somewhat less rounded or more flattened figure of the labrum. It may, however, prove to be a distinct species, when many specimens of *chersina* can be had to compare with it.

H. *alternata* and *albolabris* nob. On our return homeward these two species were not found until we arrived in the secondary country towards the eastern extremity of Lake Superior.

H. *thyroidus* nob. Falls of Niagara.

H. *ligera* nob. North-west Territory.

VITRINA, *Draparn.*

V. *pellucida* of authors. This shell was first found near Coldwater Lake in latitude 48¾° north, under stones, fallen

timber, &c. It afterwards frequently occurred in similar situations, until we approached Lake Superior, when it was no more seen. Like its congeners the inhabitant is much too large to retract within the shell, and a great portion of the body is therefore constantly exposed. No species of this genus has been hitherto found in this country; the discovery of this shell is therefore the more interesting. The specimens which we collected do not appear to differ in any respect from those of Europe.

BULIMUS, *Brug.*

B. *lubricus* of authors. This species occurred under stones, &c. on the shores and islands of Lake Winnepeek and Lake of the Woods. It is altogether similar to the European specimens of this species, excepting that the labium is somewhat more transverse.

PUPA.

P. *modesta*. *Shell* dextral, suboval, minutely wrinkled: *apex* obtuse; *whorls* six; *umbilicus* distinct; *aperture* obliquely subovate; *labium* with a prominent compressed semioval tooth equidistant from the extremities of the labrum, and a somewhat conic one rather below the middle of the columella; *labrum* not reflected, joining the preceding whorl at its upper extremity with a curve; bidentate, lower tooth placed opposite to that of the middle of the labium, the others smaller and placed a little above.

Length less than one-tenth of an inch.

Inhabits the North-west Territory. Pl. 15, fig. 5.

Var. α. The smaller tooth of the labrum obsolete or wanting.

SUCCINEA.

1. S. *avara*. *Shell* suboval, pale reddish-yellow, subdiaphanous, fragile, covered with an earthy crust; *whorls* three, minutely wrinkled; body whorl very large; *spire* small; *aperture* large, subovate, about two-thirds of the whole length of the shell.

Length three-twentieths of an inch.

Inhabits the North-west Territory.

This small species of Succinea occurs in humid places, very frequently under stones and near the water. The shell is always completely incrusted with a coating of earth. It may at once be distinguished from either the *ovalis* or *campestris* by its very small size. Pl. 15, fig. 6.

2. S. *obliqua*. *Shell* oblong-oval, nearly pellucid, pale amber-coloured; *whorls* three, very obliquely revolving, distinctly wrinkled; *spire* a little prominent; *aperture* suboval, somewhat oblique.

Length seven-tenths of an inch; length of the aperture less than half an inch.

Inhabits Pennsylvania.

Of this fine species, found in the vicinity of Philadelphia, many specimens were some time since presented to the Academy Nat. Sc. by Messrs. Hyde and Mason, and we obtained a specimen near the Falls of Niagara.

It may be at once distinguished from either the *ovalis* or *campestris* by the much greater obliquity of the revolutions of its whorls. It is very like the Helix *putris* of Linn. but it is more than double the size of that species. It may, however, be a variety of that shell. Pl. 15, fig. 7.

PLANORBIS.

1. P. *deflectus. Shell* dextral, depressed; *whorls* nearly five, minutely and regularly wrinkled across, wider than long, with a much depressed rotundity above, descending to an acute lateral edge below the middle; *spire* not impressed; *suture* indented, but not profoundly; *beneath* a little concave in the middle, exhibiting one-half of each volution to the apex; whorls flattened, slightly rounded; *aperture* declining very much, suboval, the superior portion of the labrum considerably surpassing the inferior portion and taking its origin a little above the carina; inferior portion of the labrum terminating on the middle of the inferior surface of the penultimate whorl.

Greatest breadth two-fifths of an inch.

This shell was presented to me by Dr. Bigsby, who collected many specimens in the waters of the North-west Territory.

It resembles the *exacuous* nob. but the aperture does not embrace so large a proportion of the preceding volution, and the volutions on the inferior portion of the shell are consequently more obvious, and the umbilicus is but slightly indented; the upper portion of the labrum does not extend so far beyond the lower portion, the aperture declines much more, and the carina is less acute. It has also an affinity for the *carinatus* of Europe, but in addition to other differences the aperture of that species declines but little, if at all, and the carina is an elevated revolving line. The aperture embraces the penultimate volution about as much as in the *rotundatus* of Europe, to which our shell is also allied, but differs in its declining aperture, and the less degree of rotundity of its whorls on their upper surface. Pl. 15, fig. 8.

2. P. *corpulentus*. *Shell* dextral; *whorls* more than three, rather rugged with coarse wrinkles, much higher than wide; superior surface much flattened, and edged by an abrupt acute line, which is distinct to the aperture; sides hardly rounded, and terminated below by another abrupt edge, which is not quite so definite and acute as the superior one; *spire* slightly concave; *umbilicus* exhibiting a portion of each of the rapidly retiring whorls to the apex; *aperture* longer than wide, the superior part extending higher than the preceding volution and the inferior portion declining much lower than the inferior line of the same volution.

Greatest breadth three-fourths of an inch.

Length of the aperture nearly half an inch.

Length of the penultimate whorl near the aperture rather more than three-tenths of an inch.

Inhabits Winnepeek river, Winnepeek lake, Lake of the Woods, and Rainy lake; common. Pl. 15, fig. 9.

Of this species I collected numerous specimens, but had the misfortune to lose them all, as well as a great number of interesting terrestrial and fluviatile shells, on our return to the settlements, and I am indebted to the liberality of Dr. Bigsby for the individual above described. It is closely allied to *trivolvis*, nobis, but is much less rounded on the sides of the whorls, the carinæ are more prominent, the upper side is much more horizontally flattened, the labrum is less rounded, and the whole shell is larger and higher in proportion to its width, and the aperture extends both above and below the penultimate whorl.

P. *campanulatus*, nob. Falls of Niagara.

P. *trivolvis*, nob. North-west Territory and Falls of Niagara.

P. *parvus*, nob. is common in the waters of the North-

west Territory, and may be found in plenty crawling upon the rocks near the shores. They vary in size from those found in the eastern states, being less than half as large.

P. *armigerus*, nob. St. Peter and Red rivers, common.

P. *bicarinatus*, nob. North-west Territory, rather common.

LYMNEUS.

L. *megasomus*. Large, dilated suboval; *spire* short, rapidly diminishing, acute; *whorls* about five, rounded, obtusely wrinkled across; body-whorl large, the wrinkles very obvious; *suture* deeply impressed; *aperture* subovate, much longer than the spire, within chesnut-brown; *columella* white.

Length more than one and six-tenths of an inch.

Length of the aperture more than one inch.

Greatest diameter one inch.

This remarkably large and fine species was found in Bois blanc Lake, North-west Territory, by Dr. Bigsby, to whom I am indebted for specimens. The colour is brownish, sometimes lineated across the body whorl with dull greenish and pale ochraceous; and the chesnut-brown colour of the interior of the shell, combined with its large dimensions, distinguish this species from all others yet discovered in this country. Pl. 15, fig. 10.

L. *emarginatus*, nob. from Lake Namakan, north of Lake Superior, collected by Dr. Bigsby.

L. *elongatus*, nob. Rainy Lake and Seine river, Dr. Bigsby.

L. *desidiosus*, nob. Falls of Niagara.

PHYSA.

P. *heterostropha*, nob. North-west Territory.

VALVATA.

V. *sincera*. *Shell* subglobose-conic; *whorls* nearly four, accurately rounded, finely and regularly wrinkled across; *aperture* not interrupted by the penultimate whorl nor appressed to it, but merely in contact with it, the labrum not diminished in thickness at the point of contact; *umbilicus* large, exhibiting the volutions.

Breadth less than one-fifth of an inch.

Inhabits North-west Territory.

For this species I am indebted to Dr. Bigsby. It is very similar to the *tricarinata*, nobis, but is destitute of carinated lines, and the umbilicus is rather larger; it differs from the *obtusa* of Europe, also, in the much greater magnitude of the umbilicus. Pl. 15, fig. 11.

PALUDINA.

P. *limosa*, nob. North-west Territory.

AMPULARIA.

A. *depressa*. *Shell* ventricose, subglobular, obsoletely banded with obscure green; *whorls* four, slightly wrinkled; body whorl more prominent above, somewhat flattened towards the suture, of a pale olivaceous colour, which is almost concealed by numerous, unequal, longitudinal and transverse greenish and brownish lines; *spire* very much depressed; *aperture* suboval, within somewhat glaucous,

10

11

8

Valvata sincera

Planorbis deflexus

Lymnaea megasoma

4

9

Helix diodonta

Planorbis corpulentus

6

1

5

Succinea avara

Helix hapa

Pupa modesta

7

2

3

Succinea obliqua

Helix fruticum

Helix porcina

N.Y. LYCEUM
NATURAL HISTORY

on the margin exhibiting the bands distinctly; *labrum* simple, as much rounded above as below; *umbilicus* small, nearly closed.

Greatest width one inch and nine-twentieths.

Total length one inch and a half.

Length of the aperture one and one-fifth of an inch nearly.

Inhabits East Florida.

During an excursion to East Florida, in company with Messrs. Maclure, Ord, and T. Peale, I obtained a single dead and imperfect specimen of this interesting shell. It occurred in a small creek, tributary to St. John's river, and on the plantation of Mr. Fatio. Captain Le Conte of the Topographical Engineers, has since presented me with a perfect specimen, with the information that he observed them in very great numbers on the shores of Lake George, a dilatation of St. John's river; that in some places the dead shells were piled up confusedly to a considerable height, and that the NUMENIUS *longirostra* feeds upon the living animal. The spire is still less elevated than that of the *globosa* of Swainson. Pl. 14, fig. 2.

MELANIA.

M. *virginica*, nob. Falls of Niagara.

ANODONTA.

A. *gibbosa*. *Shell* thin and very fragile; much inflated; anterior and posterior hinge-margins compressed, the former alated; surface pale-yellowish testaceous, finely radiate with green, and having somewhat regular concentric minute undulations; within somewhat iridescent.

Length about one and nine-tenths, breadth two and nine-tenths of an inch.

This shell exhibits a remarkable appearance, in the unusually great convexity of the disks and umbones. It is strikingly distinct, and was presented to me by Captain Le Conte of the Topographical Engineers, who informs me that it is an inhabitant of South Carolina. Pl. 14, fig. 3, 4.

D. CLASS VERMES.

ORDER CRYPTOBRANCHIA.

HIRUDO.

1. H. *parasitica.* A yellow vitta before; quadrate marginal spots each side; beneath with about eleven longitudinal lines; ocular points two.

Descr. *Body* dilated when at rest, narrowed before; above varied with dull-yellowish and blackish-brown; a yellow vitta commences at the anterior extremity and is more or less elongated, in some specimens less than one-fourth the length of the body, and in others extending nearly or quite to the posterior disk; lateral margin with eighteen or twenty symmetrical equal and equidistant quadrate yellowish spots; posterior disk above radiate with yellowish; ocular points two, approximate, sometimes apparently confluent; beneath very flat, whitish, with about eleven longitudinal lines; lateral edges very acute.

Length in a state of repose two inches, greatest breadth seven-tenths of an inch.

This leech is frequent in the lakes of the north-western region, adhering to the sternum or inferior shell of Tor-

toises, (Emys,) particularly to that of E. *geographica* of Lesueur. Their young are often found with them, attached in considerable numbers to the abdomen. The superior surface of the body is subject to vary considerably in the arrangement of its colours. In one specimen the fuscous colour prevails and is interrupted only by dull-yellowish distant points, which, in their disposition exhibit an approach to the formation of three longitudinal irregular series; in another individual an arrangement into three series is still more obvious; the lateral quadrate spots, the yellowish vitta, at least on the anterior portion of the body, and the ventral lines, appear to be permanent characters. The form of this species is similar to that of the H. *swampina* of Bosc, but it cannot be the same from its number of eyes and the lineation of its inferior surface. The flat inferior surface and the acute lateral edges seem formed to exclude the air and assist the disks in their office of adhering to a foreign body.

2. H. *lateralis.* Dull livid with a rufous line each side; ocular points six.

Descr. This species is more elongated than the preceding, and far less depressed; the colour of the body is uniform dull livid, not at all paler beneath, but the rufous line each side extending the whole length of the body, is rather broad, and although dull, is yet very distinct; on the superior surface are a few very remote minute black points; the ocular points are placed in a regularly curved line.

Length when at rest two inches and three-fourths.

This species occurred in most of the small lakes on the height of land, between Rainy Lake and Lake Superior.

3. H. *marmorata.* Blackish varied with dirty whitish; ocular points six.

Descr. Body slightly broadest in the middle, from

whence it diminishes very slightly and gradually towards the extremities, near the anterior extremity it is more rapidly attenuated; colour black or fuscous with irregular whitish or light coloured spots; beneath pale, generally immaculate, but sometimes with confluent black spots; the ocular points are placed in a regularly curved line.

Length when at rest about two inches and a half.

This, and the preceding, are both large species, but the present is by far more abundant in the same situations, where they may be observed, many at a view, adhering to rocks, or swimming in their undulating manner.

4. H. *decora*. Body livid with a dorsal series of twenty-two small red dots, and a lateral series of the same number of black dots of a similar size; a transverse line of ocular points in close order before; on each side of which, and at a short distance from them and from each other, are two points of the same kind; beneath fulvous with a few black spots.

This species is much smaller than either of the preceding and is comparatively rare. It occurred in Vermilion Lake.

E. CLASS INSECTA.

ORDER COLEOPTERA.

CICINDELA, *Linn. Latr.*

1. C. *longilabris*. Blackish; elytra spotted and banded with white; labrum long.

Inhabits North-west Territory.

Head and *thorax* slightly tinged with greenish; *an-*

tennæ, basal joints, blue-black; *labrum* white, nearly as long as broad, obtusely longitudinally carinated, obscurely tridentate at tip, and a little dilated at the lateral base; *mandibles* white on the exterior edge near the base; *palpi* dark blue, or cupreous; *elytra* with rather large, dense punctures; a humeral spot, another before the middle on the margin, a reclivate nearly transverse band on the middle, and a spot at the posterior curve of the elytra, white; *venter* black, with a purplish reflection.

Length less than three-fifths of an inch.

Var. α. The spots of the elytra obsolete.

This insect seems to approach nearest to C. *vulgaris*, nob. (Trans. Amer. Philos. Soc. vol. 1. new series,) but it is sufficiently distinct by the following characters. The labrum is twice as long, and the punctures of the elytra are more than double the size. The venter is sometimes dark green.

2. C. *terricola*. Black; a white line at the tip of the elytra.

Inhabits North-west Territory.

Body destitute of metallic lustre; *labrum* white; breadth more than twice the length; tip three-toothed, intermediate tooth conic acute, the lateral teeth angulated obtuse; *mandibles* white on the exterior base; *thorax* a little hairy; *elytra* with scattered very minute punctures, which are oblique, as if formed by a pointed instrument directed towards the anterior part of the insect, so that the surface before each puncture is a little elevated; a white line margins the extremity; *venter* blackish-testaceous; *tibia* dull testaceous.

Length rather more than two-fifths of an inch.

This species is closely allied to C. *pusilla*, nob. but the marking of the elytra differs, and the thorax is not so much

contracted at base and is more closely affixed to the abdomen.

POECILUS, *Bonelli.*

P. *fraternus.* Dark green; elytra dark greenish-cupreous; palpi and feet piceous-black.

Inhabits North-west Territory.

Antennæ fuscous; three basal joints yellowish, and carinated, carina dusky; *thorax* slightly margined; dorsal impressed line extending entirely to the basal edge; lateral edge regularly arcuated; basal angles slightly more than right angles; *elytra* dark coppery, with a dark green exterior margin; striæ impunctured; interstitial spaces a little rounded; *beneath* piceous-black.

Length two-fifths of an inch.

Although the thorax of this insect is not broadly margined, yet the margin is much wider than that of the *chalcites*, Helwig, (in Melsh. Catal.) and it may be distinguished from the *lucublandus*, Knoch, (in the same work,) by the colour of the palpi, &c.

DYTISCUS, *Linn. Latr.*

D. *fasciventris.* ♀ Dark olivaceous-brown; thorax and exterior elytral margin margined with yellow.

Inhabits Lake Superior.

Head darker than the elytra, greenish-back, with a rufous transverse frontal spot; *antennæ* rufous, joints dusky at their tips; *labrum* and *nasus* yellowish; *palpi* colour of the antennæ; *thorax* colour of the head, margined all round with yellowish; a longitudinal impressed line, and extremely minute scattered punctures; *scutel*

yellowish; *elytra* each with ten grooves extending nearly two-thirds the whole length from near the base; exterior margin yellowish, becoming obsolete at tip; an obsolete spot towards the extremity resembling the commencement of a branch from the colour of the margin; *feet* pale rufous; *postpectus* black, yellowish each side behind and at the anterior angles; *venter* black, with yellow bands, terminating each side in triangles of the same colour.

Length one and one-tenth of an inch.

This species is most closely allied to D. *marginalis* of Europe; the appearance of the superior surface of the body is altogether the same, even to the form and appearance of the frontal spot, nevertheless our insect is much smaller, and the arrangement of colours beneath, on the postpectus and venter, is altogether different.

LACCOPHILUS, *Leach.*

L. *punctatus.* Dusky testaceous; very regularly and profoundly punctured.

Inhabits North-west Territory.

Body suboval, short, dull testaceous; *head* with two dilated slightly impressed spaces on the front; *clypeus* obtusely rounded at tip; punctures numerous, rather sparse on the vertex; *thorax* blackish on the anterior and posterior margins; punctures subequidistant; *elytra* darker than the head and thorax, very regularly and beautifully punctured; punctures rather larger than those of the thorax, subequidistant; *beneath,* excepting the feet, also punctured.

Length more than one-tenth of an inch.

This is a very pretty species, readily distinguished from others.

BUPRESTIS, *Linn. Latr.*

B. *maculativentris.* Violaceous with a cupreous reflection; anterior thoracic angles with a spot and a series on each side of the venter, yellow.

Inhabits North-west Territory.

Head confluently punctured; a yellow spot before the eye, almost confluent with another beneath the eye; *thorax* with a very distinct margining spot at the anterior angles; punctured, but with a glabrous dorsal line and one or two lateral glabrous spots; *elytra* violaceous, with cupreous reflections; base violaceous; punctured-striate; tip with a small tooth at the sutural angle, and about four very minute teeth; *beneath* cupreous, polished; *venter* with a series of three yellow quadrate spots on each side, and a larger oblique oval one on the anal segment approaching at the middle of the segment and extending by a branch for a short distance on the edge.

Length thirteen-twentieths of an inch.

This is a very pretty insect, readily distinguished by the subocular, thoracic, and ventral spots.

SCYDMÆNUS, *Latr.*

1. S. *clavipes.* Blackish; elytra bright rufous, blackish at tip; antennæ longer than the thorax.

Inhabits Pennsylvania.

Body hairy; *head* piceous; *antennæ* rather longer than the thorax, and with the *palpi*, dull rufous; *thorax* blackish with an impressed transverse line at base and the appearance of a longitudinal one before; hairs numerous; *elytra* smooth, polished, impunctured, and without striæ; bright rufous; hairs long; humeral angles longitudinally elevated;

a slight groove at the base of each elytrum, tip black; *feet* rufous; thighs clavate; *venter* dull rufous.

Length more than one-twentieth of an inch.

2. S. *brevicornis.* Blackish; elytra bright rufous, blackish at tip; antennæ shorter than the thorax.

Inhabits Pennsylvania.

Body hairy; *head* black; *antennæ* rather shorter than the thorax, hairy, dull rufous; *thorax* polished, black; *elytra* smooth, polished, impunctured, and without striæ, bright rufous; hairs long; humeral angles longitudinally elevated; a slight groove at the base of each elytrum, tip black; *feet* rufous; thighs clavate, dusky at tip.

Length rather more than one-twentieth of an inch.

Strongly resembles the preceding, but the antennæ are much shorter and more robust, the thorax is destitute of real or apparent impressed lines, and the clavæ of the thighs are more dilated.

DORCATOMA, *Herbst.*

D. *oculata.* Rounded-oval, blackish-brown, a little hairy; antennæ yellowish-piceous.

Inhabits Pennsylvania.

Head very obscure piceous; a few short hairs; *antennæ* yellowish-piceous, first joint large, arcuated; second joint much smaller, rounded; third, fourth, fifth, still smaller and not very distinctly articulated; sixth transverse, very short; seventh much enlarged, on the inner side extending into a conic process, which is nearly as long as the preceding part of the antennæ, and when at rest is applied closely to the inner side of the eighth joint and extends quite to its tip; eighth joint elongate-obtriangular; ninth joint as long as the preceding joint, a little arcuated; *eyes* with an indented,

somewhat dilated line, extending from near the base of the antennæ to the middle; *thorax* punctured, with short hairs, and slightly tinged with piceous; anterior angles very much decurved and acute; posterior angles hardly acute; posterior margin lobed at the scutel; *scutel* small, rounded; *elytra* punctured and with short hair; exterior submargin with three impressed striæ; *beneath* punctured, hairy; *feet* dull piceous.

Length one-tenth of an inch.

The form of the penultimate joint of the antennæ differs considerably from that of the *dresdensis* in being much less dilated on the inner side, the seventh joint has the inner process more slender and the terminal joint is a little arcuated.

NOSODENDRON, *Latr.*

N. *unicolor.* Black, immaculate, antennæ piceous, clavum yellowish.

Inhabits Missouri.

Head with dense, dilated, shallow punctures; *thorax* short, length less than half the breadth; punctures less dense than those of the head; posterior edge regularly arcuated; lateral edge hardly arcuated, nearly rectilinear: angles acute; *elytra* irregularly punctured; humerus a little elevated; humeral angles subacute; *beneath* and *feet* punctured; anterior tibia widely and deeply emarginated on the exterior edge near the tip and serrated; intermediate tibia with four or five serratures on the outer edge, and a prominent tooth near the tip; posterior teeth with about five small subspinous teeth, and a robust tooth near the tip.

Length one-fifth of an inch.

ELMIS, *Latr.*

E. *crenatus.* Thorax with four elevated lines; each elytrum with two dull rufous spots.

Inhabits Pennsylvania.

Parnus crenatus? Knoch in Melsh. Catal.

Body blackish-brown; *front* with two dilated, cinereous, longitudinal lines; *antennæ* and *mandibles* rufous; *thorax* with four, obtuse, elevated, longitudinal lines; two intermediate ones nearly confluent at each end; lateral ones more distant, slightly interrupted behind the middle; *elytra* with striæ of dilated impressed punctures; an elevated line from the humerus terminates rather before the tip; another elevated line nearer the margin also originates at the humerus and becomes obsolete before the middle; a third elevated line originates at the middle of the base and also becomes obsolete before the middle of the elytrum; an oblong rufous spot on the humerus and another near the tip; *tarsi* dull rufous.

Length less than three-twentieths of an inch.

PARNUS, *Fabr.*

(*Dryops*, Oliv. Latr.)

P. *fastigiatus.* Blackish-brown, with very short dense hair; elytra with striæ of rather large punctures.

Inhabits Pennsylvania.

P. *fastigiatus.* Knoch in Melsh. Catal.

Antennæ fuscous, terminal joints yellow; *palpi* dull yellow-testaceous; *thorax* highest rather behind the middle, and with an obsolete indentation each side behind; anterior angles prominent, acute; posterior angles obtuse; *scutel* quadrate, acute behind; *elytra* with short hairs over

the whole surface, and three series of fasciculated, more ferruginous hairs on the sutural half; on this half the punctures are larger and the striæ more deeply impressed than on the exterior half where the surface has a minutely granulated appearance; tip acute; *feet* blackish-piceous; tarsi piceous; anterior tibia with a line of dense yellowish hairs before.

Length one-fourth of an inch.

HYDROPHILUS, *Fabr.*

1. H. *cinctus.* Black, surrounded with a yellowish margin.

Inhabits United States.

H. *cinctus*, Knock, in Melsh. Catal.

Body black, polished; with very numerous, minute, regular punctures; *head* with a large, triangular, yellowish spot before the eye; *palpi* yellowish; *antennæ* fuscous; *thorax* margined with yellowish; this colour is sometimes obsolete on the anterior margin, and generally obsolete on the posterior margin; *elytra* without any appearance of striæ; the exterior margin from the humerus to the suture, yellowish; *beneath* blackish-piceous; *tarsi* dull yellowish.

Length more than one-fifth of an inch.

We obtained specimens on Red river of Lake Winnepeek; it is also found in Pennsylvania.

2. H. *globosus.* Very convex, oval; elytra with striæ of punctures.

Inhabits United States.

H. *globosus.* Knoch. in Melsh. Catal.

Body very convex, black, immaculate, punctured; *head* with very regular minute punctures, and three or four somewhat larger ones before the eye; *palpi* yellowish;

antennæ yellowish, clava fuscous; *thorax* with minute punctures but slightly impressed; angles rounded; *scutel* with obsolete punctures; *elytra* with minute, numerous punctures, which are very slightly impressed, obsolete; with nine regular striæ of distinct larger punctures, and an irregular series on each alternate interstitial space; *beneath* piceous-black; *tarsi* colour of the palpi.

Length three-tenths of an inch.

This species is oval, not elongated, and is more convex than any other species of this country yet discovered.

3. H. *nebulosus*. Pale whitish-testaceous; a subsutural line on the elytra obsolete before the middle.

Inhabits United States.

H. *nebulosus*, Melsh. } Melsh. Catal.
H. *labiatus*, Knoch. }

Body very finely but irregularly punctured; punctures sometimes obsolete; *head* black or varied with black; *thorax*, angles rounded; *elytra* with a subsutural impressed line which disappears before the middle, and is more deeply impressed behind; *beneath*, excepting the feet, blackish.

Length less than three-twentieths of an inch.

I obtained a specimen in the Lake of the Woods.

APHODIUS, *Illig. Fabr.*

1. A. *hamatus*. Thorax impunctured on the disk; claw of the anterior tibia dilated, incurved.

Inhabits North-west Territory.

Body dark piceous; *clypeus* minutely punctured; margin reflected, particularly at tip; tip truncated, subemarginate; *thorax* punctured each side and at base; large, equalling at least two-thirds the length of the elytra; *ely-*

tra paler than the head and thorax; striate; striæ punctured; *feet* rufous; the claw at tip of the anterior tibia is dilated and curved inwards like a hook.

Length less than one-fourth of an inch.

An insect remarkable for its short robust stature and the proportional length of its thorax, as well as for the dilatation and crooked form of the appendages at the extremity of the tibia.

2. A. *clypeatus*. Black; elytra testaceous; clypeus, covered with small tubercles.

Inhabits North-west Territory.

Head black, convex, covered with very small obtuse tubercles; edge a little elevated, piceous; tip hardly truncated; *thorax* with irregular small obtuse rugæ; anterior angles rectangular; posterior edge regularly arcuated, not dilated in the middle; *elytra* rufo-testaceous, dusky at base; with deep, punctured striæ; interstitial lines convex; *thighs* dull-yellowish; posterior ones much dilated.

Length more than three-twentieths of an inch.

Readily distinguished by the rough appearance of the clypeus.

TROX, *Fabr.*

T. *canaliculatus*. Thorax with an entire groove; clypeal edge not reflected; elytra with alternate series of large and small elevated bristly dots.

Inhabits North-west Territory.

Body blackish-brown; *head* with numerous irregular discoidal punctures; *clypeus* obtusely rounded at tip; the edge not reflected; surface flat, excepting two little elevated protuberances on the upper part of the front; *antennæ* yellow; *thorax* with a strongly impressed obvious de-

finite groove, the bounding lines of which are uninterrupted, and are equally elevated in every part; an obtuse slightly elevated line passes across the groove near its middle; between the elevated line of the groove and the lateral edge is a slightly elevated very obtuse space; basal edge sinuated, over the scutel obtusely rounded; basal angles extended a little backwards and rounded at tip; *elytra* with four elevated lines on which are oval fascicles of yellowish short bristles; interstitial spaces each with a series of small rounded points, also furnished with bristles.

Length seven-twentieths of an inch.

It is about equal in size to the T. *capillaris*, nobis, but is altogether destitute of the fine capillary lines which ornament the elytra of that insect.

TENEBRIO, *Linn. Latr.*

T. *reticulatus*. Black; elytra rugose with impressed spots which have elevated centres.

Inhabits St. Peter's river.

Body deep black; *head* with numerous small and regular punctures, more dense before and on the labrum; *antennæ*, third joint but little longer than the fourth; *thorax* with numerous regular punctures; narrow, a little contracted before and very slightly contracted behind; lateral edge longitudinally a little arcuated, and vertically rounded, with a slightly impressed line bordered by a slightly elevated one, both so small as not to be visible to the eye; *elytra* irregularly reticulated with elevated lines; the intervening spaces with slightly elevated centres; *thighs* clavate; *anterior* and *intermediate tibiæ* a little curved; *tarsi* beneath, and inferior portion of the tip of the tibia with yellowish hair.

Length nearly seven-tenths of an inch.

This species is very distinct from any other that I have seen and very readily recognized.

PHALERIA, *Latr.*

1. P. *testacea.* Pale testaceous, beneath black; thorax impunctured; elytra striate, and with a blackish spot on each near the tip.

Inhabits United States.

Body oblong-oval, polished; *head* hardly perceptibly punctured; a transverse indented line before the eyes; *antennæ* sensibly dilated towards the tip; joints from the sixth to the tenth inclusive, transverse, hemispheric-compressed, perfoliate; eleventh nearly globose; *thorax* transverse-quadrate, impunctured, rather wider behind; an impressed puncture each side on the basal margin, anterior angles rounded; *scutel* blackish; *elytra* striated, striæ slightly punctured, more deeply impressed behind, abbreviated at the humeral angle; a blackish-brown spot on each near the tip; *tergum* blackish; *beneath* black; *feet* pale testaceous; anterior tibia serrate with short spines, tip rather abruptly dilated, forming almost a lobe on the exterior side; intermediate and posterior pairs spinulose-serrated, gradually dilating towards the tip.

Length more than one-fourth of an inch.

This insect is not uncommon. It occurs in Pennsylvania, and under dead marine animals on the sea-beach, from New Jersey to Florida.

2. P. *picipes.* Black; antennæ, mouth and feet piceous.

Inhabits the southern states.

Head destitute of an impressed line before the eyes; *antennæ* and *thorax* formed as in the preceding species,

excepting that the anterior angles of the thorax are subacute; striæ of the elytra as in the preceding; *feet* as in the preceding, excepting that the anterior tibiæ are gradually very much dilated at tip, and not somewhat abruptly dilated near the tip, the line of the exterior edge is therefore nearly rectilinear.

Length from one-fifth to less than one-fourth of an inch.

Var. α. thorax dull piceous.

Var. β. entirely piceous.

EPITRAGUS, *Latr.*

E. *canaliculatus*. Thorax with two lines and lateral edge elevated.

Inhabits United States.

♂ *Body* blackish-brown, more or less bronzed, with very numerous short cinereous hairs; *thorax* broader behind, somewhat lobed at the scutel; angles produced, very acute; lateral edge rectilinear, elevated; anterior edge abruptly undulated; disk with two elevated lines which become obsolete behind and originate each in a flattened and porrect tubercle on the anterior edge; *elytra* with dilated, slightly impressed grooves.

Length nine-twentieths of an inch.

Var. α. grooves of the elytra obsolete.

The female is very different in appearance from the male, by being entirely destitute of the elevated lines and edges of the thorax, and of the undulated form of the anterior edge of the thorax. The elevated lines and lateral edge give the thorax the appearance of having three dilated grooves. This insect is found in Pennsylvania, but is more frequent in the southern states; I also obtained specimens in Missouri.

EUSTROPHUS, *Latr.*

E. *bifasciatus.* Dark reddish-brown, sericeous; elytra black bifasciate with rufous.

Inhabits United States.

Palpi terminating with a large obconic joint, truncated; *thorax* sometimes blackish, nearly semicircular, somewhat truncated before; posterior angles rather less than a right angle; *scutel* transverse, very obtusely rounded behind; *elytra* with a rufous waved band near the base, extending to the base at the outer margin, and widely interrupted at the suture; another rufous band behind the middle, slightly undulated and hardly interrupted by the suture; sutural edge a little elevated behind; *venter* very distinctly sericeous with yellowish hair.

Length more than one-fifth of an inch.

I obtained a specimen many years ago near Philadelphia, and we lately captured another in the North-western Territory.

DIRCEA, *Fabr.*

D. *tibialis.* Black, with short hair; base of the antennæ and tibia yellowish.

Inhabits North-west Territory.

Body oval-orbicular, with very short hair, and irregularly and very minutely punctured; *antennæ,* three basal joints obscurely pale rufous; *clypeus* a little dilated before the antennæ and truncated; *palpi* dusky rufous; terminal joint rather abruptly conic-acute; *thorax* convex, short, wide; lateral edge arcuated; angles rounded; *scutel* rather large, triangular; *elytra* destitute of striæ; tip narrowed

and rounded; *tibia* pale rufous; posterior thighs much dilated, formed for leaping.

Length three-twentieths of an inch.

SERROPALPUS, *Oliv.*

S. 4-*maculatus*. Blackish-brown, sericeous; elytra with two yellow spots.

Inhabits Arkansa and Missouri.

Antennæ and *labrum* dull testaceous; *thorax*, anterior margin obsoletely dull testaceous; *scutel* minute; *elytra* narrower behind; a large, very irregular yellow spot before the middle and another behind the middle of each; *pectus* and *postpectus* distinctly punctured; *anterior tarsi* dilated and covered beneath by very dense, short, yellow hair; remaining tarsi slender; *venter* dark red-brown, paler at tip.

Length nearly seven-twentieths of an inch.

This species appears to be of rare occurrence.

HELOPS, *Fabr. Latr.*

1. H. *arctatus*. Dark brassy, irregularly punctured; elytra with dilated indentations.

Inhabits North-west Territory.

Body long, cylindrical, a little depressed; punctures dilated, rather large, profound, approximate, irregularly disposed; *antennæ* piceous, less than half the length of the body, terminal joint oblong-oval; *palpi* dark piceous, long; *labrum*, breadth equal to twice the length; a small impressed spot between the eyes; *thorax* depressed; widest hardly before the middle, from which part the edge is rectilinear to the posterior angles, and very nearly rectilinear to the

anterior angles, which are obtusely rounded; posterior angles a little angulated; *scutel* rounded behind, with short, cinereous, prostrate hairs; *elytra* not dilated behind; punctures larger than those of the thorax, often confluent; a slightly prominent line between the middle and suture, a depressed one between the middle and lateral margin; several slightly elevated lines near the tip; disk with two series of two or three much dilated alternate indented spaces; tip rounded; *beneath* blackish with small punctures; *feet* blackish-piceous.

Length half an inch.

This insect occurred on the shore of St. Peter's river, and on that of Red river of Lake Winnepeek. The large indentations of the elytra have a fortuitous appearance.

2. H. *venustus*. Dark brassy, punctured; posterior angles of the thorax slightly excurved; elytra iridescent.

Inhabits Pennsylvania.

Body densely punctured; *antennæ* and *palpi* blackish-piceous; *thoraæ*, posterior angles acute, the lateral edge near them being a little curved outwards; *elytra* with brilliant coppery and green vittæ changing place with the direction of light; striæ profound, and with the convex interstitial spaces impunctured; *beneath* cupreous, brilliant.

Length more than three-tenths of an inch.

This species closely resembles the *micans*, *Fabr.* which has been described under different names by several authors; it has the same beautiful variable colour upon the elytra, which induced Olivier to call that insect *vittatus*, and Beauvois to give the name of *tæniatus*, but it is a small species, the lateral edge of the thorax is a little curved outwards near the posterior angles, whilst that of *micans* is rectilinear in the same part, and the interstitial

lines of the elytra are convex, whilst those of *micans* are nearly flat.

CISTELA, *Fabr. Latr.*

1. C. *binotata.* Blackish, sericeous; elytra with a humeral rufous spot.

Inhabits North-west Territory.

Body black, polished; in a particular light sericeous both above and beneath with small hairs, which do not, however, at all conceal the punctures; *head* punctured; *palpi* and three basal joints of the *antennæ* rufous-yellow; *thoraæ* with equal large dense punctures; very slightly contracted behind, rounded before; posterior angles not prominent; an abbreviated longitudinal impressed line at base, on each side of which is an obsolete dilated impressed lunate space; *elytra* densely punctured, and with punctured striæ; humeral gibbosity rufous; *feet* dull rufous, sericeous.

Length nearly three-tenths of an inch.

2. C. *sericea.* Pale testaceous, sericeous; striæ of the elytra obsolete.

Inhabits United States.

C. *sericea,* Knoch in Melsh. Catal.

Head minutely punctured, transverse impressed line before the antennæ very obvious; *thoraæ* semioval, a little truncate before and not undulated behind; posterior angles rectangular; *elytra* hardly perceptible, darker towards the tip, rather lighter at base; striæ obsolete, excepting two next the suture which are distinct; *wings* a little dusky, particularly towards the tip; *feet* somewhat paler than the body.

Length one-fourth of an inch.

A very common species, particularly in July on the Ceanothus Americanus and other flowers.

MELANDRYA, *Fabr. Latr.*

1. M. *striata.* Black; thorax with three grooves; front with an impressed dot; elytra striate and punctured.

Inhabits the middle and northern states.

Serropalpus canaliculatus, Melsh. Catal.

Head with numerous minute punctures; a distinct rather longitudinally oval impressed spot between the superior part of the eyes; *palpi* at tip of the terminal joint, and one or two terminal joints of the *antennæ* dull rufous; *thorax* gradually dilating to the base, from the width of the head to that of the elytra; surface minutely punctured with small sparse hairs; three dilated longitudinal grooves, or undulations, obsolete before; lateral edge almost rectilinear to near the posterior angles, where it is a little incurved, it is vertically rounded before the middle, and acute behind the middle; posterior angles nearly right angled; *scutel* suborbicular, convex, punctured; *elytra,* striæ dilated, with numerous punctures, those of the base being more distinct as the striæ are not so profound in that part.

Length three-fifths of an inch.

A specimen of this interesting insect occurred in the North-west Territory. My friend, the Rev. John F. Melsheimer, with whom I corresponded on the subject of this species, agrees with me perfectly in the propriety of placing it in this genus, and in its being altogether different from the S. *canaliculatus,* Illig. Melandrya *canaliculatus,* Fabr. This conclusion indeed is irresistible, when we compare our insect with the description of that of Europe, and

with the figures given by Olivier, Panzer, Latreille, and others.

2. M. *labiata.* Black; labrum rufous; elytra destitute of striæ.

Inhabits Pennsylvania.

Head with minute punctures; no impressed frontal spot; *labrum* distinctly rufous; *antennæ*, terminal joint at tip, tip of the *palpi* and of the *tarsi*, rufous; *thorax* with the lateral edge regularly arcuated; a deep slightly arcuated groove on each side almost divided transversely into two impressed dots by an obtuse elevated line; a central nearly obsolete impressed line; *scutel* rounded, convex, punctured; *elytra* densely punctured; punctures small; striæ none; three or four obsolete raised lines.

Length rather more than two-fifths of an inch.

A smaller species than the preceding and more rare; it differs also in the colour of the labrum, the more rounded form of the thorax, and in the elytra being destitute of striæ. It may be sometimes found on plants in June.

LAGRIA, *Fabr. Lam.*

L. *aenea.* Green; thorax oblong; elytra punctured; antennæ and palpi yellowish.

Inhabits United States.

L. aenea, Melsh. Catal.

Body green, sometimes tinged with brassy; *head* irregularly punctured; with a few scattered hairs, which are more numerous on the labrum; a transverse groove between the antennæ, formed by the incisure of the nasus; *antennæ* yellowish rufous, terminal joint longer than the three preceding ones together; *palpi* yellowish; *thorax* cylindrical, rather larger than broad, punctured, sometimes with transverse abbreviated wrinkles; posterior angles

slightly excurved; *elytra* nearly rectilinear, not dilated at the posterior curvature; punctures dense, profound, rather large; *beneath* blackish-green; *tarsi* dark testaceous.

Length from two-fifths to nine-twentieths of an inch.

This is not the LAGRIA *aenea*, Fabr. Ent. Syst. Suppl. as the late Mr. F. V. Melsheimer supposed it to be, for independently of the different specific characters in the description of that insect, it has since been referred by that author to the genus DASYTES, and must therefore be a Pentamerous insect. The circumstance of that species being removed from the genus LAGRIA enables me to retain the specific name given by Mr. Melsheimer. We obtained a specimen on Red river.

LYTTA, *Fabr.*

L. *aenea*, nob. varies in being green, with black tarsi. The antennæ of this species resemble very much those of the genus Mylabris.

COCCINELLA.

C. *labiculata*, nob. This species varies considerably in colour, but not, as I believe, in the number or arrangement of its spots.

Var. α. Spots of the elytra ocellate, being surrounded by a yellowish areola.

Var. β. Elytra yellowish-white, with the black spots as in the species.

RYNCHITES, *Herbst. Latr.*

R. *rubricollis*. Blued-black; thorax and feet rufous; elytra striate, hairy.

Inhabits United States.

R. *rubricollis*, Melsh. Catal.

Body slender; *head* hairy, black, with irregular punctures larger on the rostrum; *antennæ* and *labrum* dark piceous; *thorax* rufous, hairy, with dilated irregular punctures, and a longitudinal impressed dilated line, which neither reaches the anterior nor posterior margins; *scutel* black, rounded; *elytra* with regular striæ of punctures furnishing upright hairs; interstitial lines with each a series of upright hairs; *pectus* rufous; *postpectus* and *venter* blackish; *feet* rufous, pale.

Length more than three-twentieths of an inch.

This insect occurs occasionally in Pennsylvania; we also found a specimen on Red river of Lake Winnepeek.

CERAMBYX.

C. *scutellatus*. Brassy-black, punctured; scutel pure white.

Inhabits North-west Territory.

Body brassy-black; punctures numerous, confluent, impressed, with minute hairs; *head* with a deeply impressed line between the antennæ, extending to the origin of the thorax; *front* with minute punctures; *labrum* piceous; *mandibles* dark piceous at base; *antennæ* longer than the body, dark reddish-piceous, paler at base; *thorax* with a very robust short spine on each side; posterior margin with an impressed transverse line; anterior margin with the punctures so transversely elongated and confluent as to appear wrinkled; *feet* blackish-piceous, paler at base; *scutel* covered with dense prostrate pure white hair; *elytra* with the impressed punctures larger at base, transversely confluent; humerus rather prominent, obtuse; on different parts of the elytra is dense, dirty brown, very

short, prostrate hair, tip unarmed; *beneath* blackish with a purplish or slight cupreous tinge; a little hairy, particularly on the postpectus.

Length nine-tenths of an inch.

SAPERDA, *Fabr.*

S. *vestita.* Body entirely covered with a very short greenish-yellow hair; elytra with three small dots.

Inhabits near the southern extremity of Lake Michigan.

Antennæ about the length of the body; *eyes* dark chesnut; *thorax* with an obsolete dorsal line; *elytra* unarmed at tip; dots black, small, three on each elytrum, placed one before and near the middle, largest, one a little nearer the base and more distant from the suture than the other, and one behind the middle, distant from the preceding in a line with the anterior one.

Length three-fourths of an inch.

A very fine insect. It is also sometimes found in Pennsylvania.

CLYTUS, *Fabr.*

1. C. *speciosus.* Black; thorax dilated; elytra about five-banded; feet yellow.

Inhabits near Prairie du Chien.

Body deep black; *head* with a band passing from the vertex round behind the eyes and meeting a band which is round the mouth above, yellow; a yellow band on the front immediately above the antennæ, terminating in the sinus of the eyes; *mandibles* yellow; *nasus* and *labrum* pale yellowish, glabrous; *antennæ* all black; *thorax* subglobular, depressed; an oblique spot each side

before, and another oblique longer spot or abbreviated line each side of the middle, yellow; an arcuated impressed line each side of the middle; *scutel* yellow; two small yellow spots before the scutel under the thorax; *elytra* with yellow bands; first band forming a regular arch of which the scutel represents the key stone; second band in the form of a W, each V receiving a termination of the first band; third band nearly transverse, placed upon the middle; fourth band arcuated each side from the suture obliquely backward, parallel and near to a large terminal spot or band, which on each elytrum is ovate with a central black spot; tip with a short obtuse tooth; *humerus* with three small spots; *postpectus* spotted with yellow; *thighs* with a brown line on the inner side; *venter* yellow.

Length less than one inch.

This very fine insect was caught on the banks of the Wisconsan river. It is certainly the finest of all our species of this genus, and seems to be allied to the *detritus*, but is sufficiently distinct.

2. C. *undulatus*. Brown; thorax subbifasciate; elytra with a spot and three bands, yellow.

Inhabits North-west Territory.

Body dark brown; *head* darker than the elytra; *antennæ* dark ferruginous; *front* below the antennæ bilineate with pale yellow; *thorax* darker than the elytra, rough with minute spines and hairs; anterior and inferior margins yellow, interrupted above; basal margin with a transverse yellow spot each side; *elytra* with a transverse spot on each near the base; an undulated narrow band across the middle, rising along the suture nearly to the scutel; an undulated transverse band behind the middle, and a terminal band; *postpectus*, incisures margined with yellow; *venter*, segments margined with yellow.

Length ♂ half an inch, ♀ three-fifths of an inch.

This appears to have some resemblance to the *mucronatus* of South America, but the elytra are not obviously mucronate, the markings also of the superior surface of the body materially differ.

MOLORCHUS, *Fabr.*

M. *marginalis.* Yellowish; elytra dusky on the disk; antennæ shorter than the elytra.

Inhabits United States.

Body with numerous minute hairs; *head* yellow; *vertex*, *palpi*, blackish; *antennæ* short, hardly reaching the tip of the elytra, and excepting the three basal joints, blackish; *eyes* prominent, black-brown; *thorax* short, transversely oval, yellow with a dusky disk; *elytra* much abbreviated, rounded at tip, yellow; disk dusky, reaching to the base; the margin at tip is broad so as to resemble a yellow spot on each elytrum; edge, like that of the thorax, a little elevated, particularly at tip; *abdomen* long, yellow; segments more or less tinged with rufous at base; tail dusky or black; *feet* more or less dusky, with yellow incisures, sometimes nearly all yellow; *venter* somewhat sericeous.

Length three-tenths of an inch.

This species is not uncommon in Pennsylvania, and it is also an inhabitant of the North-west Territory.

HISPA, *Linn.*

H. *vittata*, Fabr. This species varies much in colour, so much so indeed, that more than one species might be formed of it by a naturalist who relied implicitly on the

description which Fabricius gives of the insect. He describes the thorax to be "obscure aeneus, nitens lateribus rufescentibus," and the elytra "obscure aenea, nitidula: vitta lata, fusca." Now, I have a specimen, taken near Philadelphia, which agrees very well with these characters, although the thorax exhibits a tinge of rufous, and has the additional character of an obscure yellowish-brown exterior margin of the elytra, which might however, on a superficial examination, be very readily overlooked. But several specimens which we obtained in the North-west Territory, though evidently the *vittata*, differ so widely from the quoted description, that they would probably be considered as altogether new by an entomologist who had not a specimen which could serve as a link to the Fabrician specimen. These individuals all correspond perfectly in having a bright rufous thorax, dark steel-blue elytra with a narrow rufous fillet and lateral margin; the venter also is very dark steel-blue.

H. *marginata.* Fulvo-sanguineous; elytra with sanguineous lines; feet yellowish.

Inhabits United States.

H. *marginata*, Melsh. Catal.

Head with an acute impressed line; *antennæ* dark rufous, not surpassing the thorax; *thorax* with dilated irregular punctures; anterior and lateral edge dull sanguineous; *elytra* serrate on all the outer edge; sutural edge, external edge, and four lines elevated, and with abbreviated sanguineous lines; first line bifurcate at base; third line widely interrupted in the middle and confluent with the fourth line near the tip and on the humeral tubercle; fourth line serrated; humeral tubercle prominent; interstitial spaces with a double series of profound, dilated punctures, separated by elevated lines; tip of the elytra so

obtuse as to appear truncated; *beneath* sanguineous; *feet* pale yellowish.

Length more than one-fifth of an inch.

Var. α. Disk of the pectus and postpectus, black.

This is our most common species, and we found a specimen in the North-west Territory.

GALLERUCA, *Geoff. Latr.*

G. *decora.* Dusky; elytra dull testaceous, sericeous with golden-brassy hair.

Inhabits North-west Territory.

Body dusky; *head* with a transverse impressed line between the eyes and another descending between the antennæ; *antennæ*, two basal incisures whitish; *face* between the antennæ and a little above them pale yellowish; *labrum* and *palpi* blackish; *thoraæ* tinged with golden-brassy hair; a longitudinal impressed line, and a lateral sublunate impressed space; anterior margin, particularly on each side, dull whitish; anterior angles with a slightly elevated tubercle surmounted by a single hair, and separated by an impressed line; *elytra* dull testaceous, sericeous with brilliant, dense, prostrate, golden-brassy hair; punctures rather large, profound, scattered irregularly; *beneath* blackish, with very short prostrate hair; punctures small; *feet* whitish.

Length less than one-fifth of an inch.

ALTICA, *Geoff. Latr.*

A. *tæniata.* Black; antennæ, feet, and vitta on the elytra, white.

Inhabits North-west Territory.

Body deep black, polished; *head* with rather distant, profound punctures; region of the antennæ a little elevated and dull rufous; *antennæ* pale, dusky at base and tip; *thorax* punctured; punctures rather large and profound, but not very dense; no impressed line; posterior angles with a minute abrupt excurvature, acute; *elytra* punctured like the thorax, with a longitudinal white vitta on the middle of each, commencing at the middle of the base and extending rectilinearly, with a slight degree of attenuation near to the tip, and occupying about the sixth part of the surface; *feet* pale, posterior thighs dusky towards the tip.

Length three-twentieths of an inch.

This species resembles A. *striolata*, Schoenh. (which seems to be the CRIOCERES *vittata* and GALLERUCA *elongata* of Fabr., and Mr. J. F. Melsheimer quotes also as synonymous the A. *flexuosa*, Panzer,) but it is larger, of a more elongated form, and the vitta of the elytra is not flexuous as in that common and profusely named insect. I have not met with it in the Atlantic states.

EUMOLPUS, *Kugell. Latr.*

1. E. *flavidus*. Pale yellowish; elytra striate with double series of punctures.

Inhabits United States.

Body densely punctured; punctures rather large and profound; *head* with two slightly elevated tubercles between the antennæ; *thorax* tinged with rufous; *elytra* with elevated lines, of which the inner one curves round at base and descends a short distance to unite with the sutural line; interstitial spaces, excepting the subsutural one and the two exterior ones, with double series of rather

large profound punctures; exterior edge blackish-brown; *venter* dusky.

Length nearly one-fifth of an inch.

Var. *a*. interstitial spaces of the elytra black; beneath, excepting the feet, black.

This insect is common in Pennsylvania; the variety was obtained on St. Peter's river, and might readily be mistaken for a distinct species.

2. E. *cochlearius*. Body black; base of the antennæ, tibia and elytra testaceous.

Inhabits North-west Territory.

Body short, robust; *head* punctured, hairy; an impressed line from the vertex bifurcates near the antennæ; *antennæ*, five basal joints testaceous, more slender than the remaining ones, and hardly equalling their collective length; *palpi* testaceous, terminal joint black; *thorax* with short, prostrate, cinereous hairs like those of the head; punctured, punctures rather large, giving origin to the hairs; transversely oval; sides without edges; *elytra* testaceous; punctures numerous, rather large, subequidistant, giving origin to prostrate hairs; *beneath* deeper black, with smaller punctures and shorter hairs; *feet* also with fine hairs, more numerous on the tibiæ which are testaceous.

Length ♂ more than three-twentieths, ♀ one-fifth of an inch.

COCCINELLA, *Linn.*

C. *bitriangularis*. White; thorax with six, elytra each with nine, black spots.

Inhabits North-west Territory.

Body above white; *vertex* black, the colour extending downwards in a point near each eye; *thorax* with six large

black subquadrate spots, placed by threes in two triangles, one on each side of the middle, the two inner spots of each triangle sometimes confluent; *scutel* black; *elytra*, each with nine spots, placed as follows; one, large subquadrate; two small; one large oblong; two small; two, the exterior one elongated; one small, transverse; *beneath* black; feet yellowish-white.

Length more than one-tenth of an inch.

ORDER ORTHOPTERA.

SPECTRUM, *Stoll. Lam.*

S. *femoratum.* Apterous; intermediate thighs dilated, angulated, and with the posterior thighs armed with a spine near the tip.

Inhabits United States.

Body greenish-brown, without any rudiments of hemelytra; *head* yellowish with three dilated fuscous vittæ; *antennæ* elongated, brown; *anterior thighs* unarmed, simple, bright green; *tibia* dull green, tip and *tarsus* testaceous; *intermediate thighs* dilated, angulated, pale ochreous, annulated with brown, the inferior angulated lines slightly serrated; a prominent, piceous, acute, robust spine beneath near the tip; tibia greenish, slightly serrated on the inner side; tarsus testaceous; *posterior thighs* brownish, ochreous, with a prominent, piceous, acute, robust spine near the tip, beneath.

Length about three inches.

A specimen occurred at the Falls of Niagara on a Hickory tree, (Carya,) and I formerly obtained one near the Missouri river. They are both males.

ORDER HEMIPTERA.

SCUTELLERA, *Lam.*

1. S. *binotata.* Head much arcuated, subtrilobate at tip; a large cinereous spot on the humeral region.

Inhabits North-west Territory.

Body oval, yellowish-gray, varied with dusky; punctured; punctures small, black; *head* longitudinally very much decurved, not forming a right line even on the vertex; fuscous, with three obsolete, dull fulvous vittæ; punctures dense, small, profound; two profound, very obvious, distinctly undulated impressed lines on the anterior two-thirds of the head, the included space a little elevated, and at tip forming a small lobe; lateral edge concavely arcuated, forming a rounded lobe at the lateral tip; *thorax*, punctures rather smaller than those of the head; anterior half, excepting the lateral margin, unequal, fuscous, with three obsolete dull fulvous lines; posterior half abruptly a little elevated; lateral edge black, concavely arcuated before and convexly so behind; posterior angles slightly emarginated; *scutel* entirely concealing the tergum and the hemelytra, excepting a very small portion of the latter at base; basal disk dusky; a glabrous line extending to the tip and margined with dusky; a large cinereous semiorbicular spot in which are abbreviated black lines, extending from the humeral angle to the lateral middle; *beneath* covered with black punctures; *feet* black; *knees* and spot near the tip fulvous; *tibia* fulvous with black lines; *tarsi* black.

Length more than one-fourth of an inch.

This species may be distinguished by the curvature of

the line of the head, and by the large spot on the humeral region.

2. S. *æneifrons.* Dull fulvous, varied with fuscous; head and two spots on the thorax brassy.

Inhabits North-west Territory.

Body oval, punctured; *head* densely punctured, convex, with two impressed nearly rectilinear lines from the tip abbreviated at the vertex; lateral edges convexly arcuated, tip rounded, the space included between the impressed lines very slightly projecting; *antennæ* fuscous, basal joint whitish; *thoraæ* dull fulvous, with obsolete longitudinal fuscous spaces, and a brassy triangular spot each side before; lateral edge nearly rectilinear to the posterior angles, which are rounded entire; *scutel* dull fulvous, varied with fuscous; *hemelytra* punctured, visible portion triangular; *beneath* pale, head brassy, a brassy spot on each side of the pectus; *thighs* with a few black points.

Length about three-tenths of an inch.

This species is subject to vary in being rather smaller, and in the fuscous variegations being hardly discernible, but the other characters remain unchanged.

MEMBRACIS, *Fabr. Latr.*

1. M. *diceros.* Thorax 2-horned; varied with brown, pale before; wings and beneath blackish.

Inhabits United States.

Body above punctured, truncated and vertical before, surmounted by two horizontal subconic horns extending laterally; *clypeus*, vertical portion of the *thorax*, and triangular space included between the horns, whitish-green, varied with fuscous; horns fuscous behind and beneath; *back* acutely carinated, terminated in a very acute subulate de-

curved point nearly as long as the abdomen, but much shorter than the hemelytra; sides of the thorax posterior to the horns blackish-brown, with an arcuated spot or line behind the horns, and a band near the tip, whitish; *hemelytra* and *wings* blackish-brown; *beneath* blackish; *rostrum*, *knees*, *tibia*, and *tarsi*, whitish.

Length three-tenths of an inch.

This is an inhabitant of Pennsylvania, and also of the North-west Territory. It is closely allied to CENTROTUS *bubalus*, Fabr. and is infested by LEPTUS *hispidus*, nob.

2. M. *trilineata*. Brownish-rufous; thorax elevated on the middle, with three longitudinal, one oblique, and one transverse line, whitish.

Inhabits North-west Territory.

Body with rather large dense punctures; *head* pale greenish-yellow, obsoletely irrorate with brown points; *thorax* before rounded, unarmed; a dilated pale greenish vitta from the head, is divided by the rounded elevation near the middle of the back, and passes down on each side in an oblique white line, which terminates at the inferior edge behind the middle; a narrow line on each side passes from the head and terminates at the emargination of the origin of the hemelytra; a white band near the tip margined with fuscous; dorsal foliaceous elevation taking its rise behind the line of the origin of the hemelytra, its edge very obtusely curved, and gradually disappearing behind at the white band, its sides in the middle are abruptly compressed; tip acute, not attenuated; *hemelytra* with a punctured scale at base, which is adjusted in the emargination of the thoracic edge; coriaceous exterior margin less than one-fourth the length of the hemelytra, and punctured; *beneath* yellowish-green.

Length three-tenths of an inch.

3. M. *concava.* Fuscous with elevated lines on the thorax, and an oblique white band behind.

Inhabits North-west Territory.

Body with dilated punctures; *head* inequal, varied with whitish and fuscous; tip a little more prominent in the middle; *thorax* unarmed, rounded before, with a carina originating at the head and continued to the tip; elevated lines like nervures, which are reticulate on the anterior part and near the back, but on the sides they are distinctly four or five in number; back over the origin of the wings a little concave; anterior or front of the thorax pale; carina on its concave portion white, and a white oblique band from behind the middle of the back to the exterior edge nearer the tip; tip obtuse, hardly surpassing the hemelytra; *hemelytra* dull amber, dusky at tip; nervures brown; a fuscous, coriaceous, punctured basal margin extending more than half the length of the wing; a fuscous, punctured scale adjusted in an emargination of the edge of the thorax; *beneath* piceous-black; *knees, tibia,* and *tarsi,* yellowish.

Length one-fifth of an inch.

Var. *α.* Thorax ferruginous or whitish, black or fuscous before and behind.

This species is also an inhabitant of Missouri and Arkansa.

4. M. *binotata.* Thorax with a compressed horn extending above the head, and two spots on the back.

Inhabits United States.

Body fuscous, punctured; *head* longer than broad, rounded at tip, minutely punctured; *thorax* with a projecting horn before, which rises high above the line of the back, compressed, carinated above, each side, and beneath, and incurved towards the tip; between the lateral and in-

ferior carinæ are three elevated lines converging towards the eye; superior carina of the horn continued upon the back to the tip; lateral carina of the horn continued upon the side to the middle of the thoracic edge; carina of the back slightly undulated, with two yellowish spots, of which one is on the middle and the other near the tip smaller and placed nearer to the anterior one than its own length; tip acute; *anterior* and *intermediate tibiæ* dilated, foliaceous; *posterior tibia* with two serrated lines behind; *hemelytra* opaque, much longer than the abdomen; *wings* hardly longer than the abdomen.

Length including the horn seven-twentieths; exclusive of the horn more than one-fifth of an inch.

The eyes are very nearly equidistant between the tip of the horn and of the hemelytra. It very closely resembles the *lanceolata*, Fabr. an inhabitant of South America, of which it may possibly prove to be a variety.

5. M. *latipes*. Thorax with a compressed, porrect horn; body fuscous, immaculate.

Inhabits United States.

Body fuscous, punctured; *hemelytra* paler; *thorax*, horn extended in a line with the back and slightly decurved at tip; but in other respects resembling that of the preceding species; back immaculate; posterior tip acute; *hemelytra* paler than the thorax; nervures fuscous.

Length equalling the preceding species.

This species very closely resembles the *binotata*, but the horn has a very different direction; the back is destitute of spots, and the hemelytra seem to be of a more membranaceous texture.

CERCOPIS, *Fabr. Germar.*

C. *parallella.* Hemelytra with two whitish bands, which are margined with dusky.

Inhabits North-west Territory.

Dusky yellowish-brown, punctured; *head* densely punctured; dusky in the middle and near the eyes; a glabrous somewhat elevated longitudinal line; length less than one-third of the breadth; *thorax* less densely punctured than the head; angulated at the middle of the anterior edge; a glabrous somewhat elevated line from the anterior central angle, continued on the scutel; *scutel* acute, punctured at base, glabrous at tip; *hemelytra* densely punctured; an oblique band from the tip of the scutel, attains the exterior edge near the middle, it is whitish, margined with dusky; another oblique band parallel with the preceding and of the same colours, is placed a short distance behind the middle; near the tip on the inner edge is a whitish spot; *pectus* and *feet* yellowish; *tarsi*, terminal joint dusky; *tergum* and *venter* dusky, margined with sanguineous.

Length two-fifths of an inch.

This species varies a little in the shade of its colouring, and when dark in colour, the bands are almost obsolete. This species also occurs in Missouri and Arkansa.

ORDER NEUROPTERA.

BAETES, *Leach.*

1. B. *bilineata.* Large, pale ferruginous; inferior wings margined behind with dusky; tergum fuscous with a double series of whitish lines.

Inhabits St. Peter's river.

Head above somewhat fulvous; beneath and front yellow; *thorax*, first segment yellowish-brown, blackish each side and before; second segment pale brownish, a little tinged with rufous and with indistinct oblique whitish lines, proceeding from the longitudinal impressed line; two brown spots on the middle placed transversely; *wings* hyaline, whitish, with fuscous nervures; posterior margin of the inferiores fuscous; *tergum* fuscous, lateral margin whitish; posterior edges of the segments white above; a double series of whitish, oblique, dilated, abbreviated lines.

Length ♀ to tip of the wings one and three-tenths of an inch.

This is much the largest species of this country I have seen, it appeared in considerable numbers.

2. B. *alternata.* Wings whitish, nervures fuscous; tergum fuscous, segments whitish at their bases.

Inhabits North-west Territory.

Body fuscous; *head* on the anterior margin and *genæ* white; *thorax* pale brownish-livid, yellowish near the scutel; *wings* hyaline, with a whitish reflexion, nervures not margined; *pleura* and *pectus* varied with yellowish; *feet* pale ochreous, a fuscous annulus near the tip of the thighs; *tergum* fuscous; segments whitish at base, one or two ultimate segments with two whitish longitudinal lines; venter whitish, each segment with two oblique lines and two intermediate points, black; *seta* whitish, with regular fuscous spots alternating.

Length of the body ♂ from two-fifths to half an inch.

Closely allied to the *femoratus*, nobis,* but may be dis-

* Western Quarterly Reporter, vol. 2. p. 162.

tinguished from that species at once, by the nervures of the wings being altogether destitute of coloured margins.

3. B. *alba.* White; vertex and anterior feet above dusky.

Inhabits Winnepeek river.

Thorax slightly tinged with pale yellowish-brown; *anterior feet* short, rather robust; *nervures* upon and near the costal margin dusky.

Length of the body ♀ about half an inch.

This insect appears in immense numbers. They rise upon the wing in the evening, and their short existence in the perfect state appears to be terminated before sunrise. For a more particular account of this species, see the Narrative.

ASCALAPHUS, *Fabr.*

A. 4-*maculatus.* Wings with a white costal spot; antennæ as long as the body; tergum varied with black and testaceous; eyes with a suture.

Inhabits Pennsylvania.

Head and *stethidium* covered by long cinereous hair, the latter part blackish, varied with pale testaceous; *labrum* honey-yellow; *antennæ* as long as the body, dull yellowish-brown; incisures blackish, clavum oval, compressed, blackish with pale incisures; *eyes* large, prominent, in the middle divided by an impressed line; *wings* hyaline with a milk-white reflexion, an opake snow-white spot near the tip of the costal margin, nervures black; *tergum* testaceous, segments with a dorsal line and oblong spot each side, black, terminal segments nearly all black; sides black, varied with testaceous.

Length to tip of wings one inch and a half.

Like the *cayennensis*, Fabr. this species has a white spot on each wing, but the clavum of the antennæ is not truncated. The eyes are each bisected by an impressed line in the middle, as in the *maculatus*, Oliv. and all others of this genus. This species was found by Mr. William W. Wood.

HEMEROBIUS, *Latr. Lam.*

1. H. *irroratus*. Blackish; thorax with three lines and lateral margin yellowish; wings hyaline with black spots.

Inhabits United States.

Body hairy; *antennæ* fuscous, less than half the length of the body, filiform; *orbits* above and before, and *hypostoma* glabrous, white, the latter with a broad, transverse, brownish line near the tip; *labrum* white, with two obsolete, dusky, longitudinal spots; *maxillary palpi* black; a large, transverse, quadrate, black, glabrous spot, surrounding the base of the antennæ; *thorax*, anterior segment five-lined, lines equal; *feet* whitish, hairy, four anterior thighs annulate with brown near the tip, their tibia at tip and annulus near the base, brown; *pleura*, incisures whitish; *wings* hyaline, with numerous irregular, unequal, black and white points and spots, which are larger on the inner and outer margin; nervures and margins alternately spotted with blackish and white; nervures of the disk with only a single line of connecting nervures which pass across the middle; margin with numerous nervures; *inferior wings* without spots, excepting on the margin.

Length to tip of the wings one inch and a quarter.

Rather rare in Pennsylvania. We obtained a specimen in the North-west Territory, and Mr. Isaiah Lukens informed me that they are extremely numerous near Lake Erie in June.

2. H. *vittatus*. Pale yellowish, with a black vitta on the pleura; abdomen fuscous; wings spotted with black.

Inhabits Pennsylvania and New Jersey.

Head with a transverse, quadrate, dusky spot between the eyes; *antennæ* somewhat longer than the head and thorax, yellowish-rufous, blackish at tip and base; *eyes* prominent, black; *thorax* greenish-white, dusky between the wings, first segment a little narrowed before; *wings* hyaline, with black spots; costal nervures articulate with black and white; a small white spot near the costal tip of each wing; inferior wings with fewer spots than the superior ones, but behind the costal middle is a large orbicular spot, and a smaller irregular one near the tip; *metathorax* blackish above; *pleura* with a broad blackish vitta, extending from near the head to the abdomen; *feet* blackish, thighs at base, an annulus near the tip of the posterior ones, and posterior tibia towards the tip, pale; *abdomen* blackish, with an obsolete, pale, small spot on some of the segments of the tergum.

Length to tip of the wings one and two-fifths of an inch.

This fine insect is in the collection of the Philadelphia Museum, and was found by Mr. Titian Peale.

CHAULIODES, *Latr.*

C. *serricornis*. Brownish-black, wings spotted with white.

Inhabits United States.

Head somewhat wider than the thorax, dusky testaceous at base, diameters nearly equal; *antennæ* deeply serrated, black; *wings* blackish; *superior wings* with a white band across the middle not attaining the inner margin and widest on the costal margin, a white spot on the costal

margin near the tip, and numerous, small, white dots on the disk near the tip; *inferior wings* with a narrow band across the middle not attaining the inner margin and near the tip larger spots, white.

Length to tip of the wings from one inch and a quarter to one inch and a half.

A fine insect, which appears to inhabit almost every part of the United States, though I have not met with many specimens any where. Mr. Nuttall brought me an individual from Arkansa; Dr. Bigsby took a specimen as far north as the Lake of the Woods, and I have found one in Pennsylvania, another in Missouri, and a third on Red river of Lake Winnepeek.

PHRYGANEA, *Linn. Latr.*

1. P. *subfasciata.* Pale yellowish-brown; wings covered with minute elevations, with two spots and posterior margin fuscous.

Inhabits North-west Territory.

Antennæ brown, first joint yellowish on the inner and inferior sides; *thorax* with two series of large granules furnishing hairs; *superior wings* covered with bullæ or minute raised points, and with short scattered hairs; inner margin of a somewhat darker colour; a band on the middle not reaching the costal margin; an irregular sublunate line, composed of confluent spots at the termination of the central elongated area, and posterior margin, fuscous; *inferior wings* fuscous on the posterior margin; setæ of the tibia and tarsi, black.

Length to tip of the wings seven-tenths of an inch.

2. P. *radiata.* Pale yellowish-brown; wings with a fuscous circle, from which proceed four radii.

Inhabits North-west Territory.

Antennæ fuscous; *vertex* and *neck* hairy; *thorax* on each side before the wings, and two dorsal series, hairy; *superior wings* nearly hyaline; beyond the middle a large fuscous circle from which a dilated line proceeds to the tip, another to the inferior angle, a third to the carpal spot, and a fourth towards the base, interrupted in its middle; dorsal margin, particularly towards the base, fuscous; surface with scattered hairs, those of the nervures more distinct and blackish; *tibia* and *tarsi* with black setæ.

Length to tip of wings seven-tenths of an inch.

3. P. *sericea.* Blackish, sericeous; wings varied with fuscous and sericeous.

Inhabits North-west Territory.

Head with a cinereous gloss, and a few long hairs; *antennæ* brown, incisures margined with yellowish; basal joint colour of the head; *thorax* with a cinereous gloss in a particular light; *superior wings* varied with pruinose and fuscous; a transverse, quadrate, blackish spot on the middle of the inner margin; hairs numerous, minute, those of the nervures larger and black; *inferior wings* immaculate; *posterior pairs of feet* pale ochreous, sericeous, with black setæ.

Length to tip of wings more than two-fifths of an inch.

MANTISPA, *Illig. Latr.*

M. *brunnea.* Light brown; antennæ fuscous, light brown at the extremity; wings with a very broad, brown margin.

Inhabits United States.

♂ *Antennæ* short; posterior and inferior *orbits* yellow; *thorax*, first segment obtusely wrinkled, or undulated, anterior margin black, submargin yellow; base black, with a

yellow, transverse, angulated line; *scutel* yellow; *metathorax* yellow on the posterior edge; *pleura* bilineate with yellow; *wings* with a broad, light brown costal margin and tip; *feet*, intermediate and posterior pairs with yellow tibiæ and tarsi, a rufous spot being near the knee; anterior thighs blackish on the inner side, with a yellow exterior inferior margin, and numerous spines on the inferior edge, of which one is very prominent; *tergum* at the base of the first and second segments black, the former margined with yellow; *venter* black at base, segments broadly margined with yellow.

♀ The yellow colour and marginings, excepting on the feet and first segment of the thorax, obsolete; the wings are darker than those of the male, and the hyaline portion of the wings is tinctured with a shade of the general colour.

Length of the body ♂ half an inch, ♀ to tip of wings more than nine-tenths of an inch.

A specimen of the female of this curious insect was presented to me about a year ago by Mr. William Mason of this city; it was found near Philadelphia by Mr. Tyler. The male occurred on St. Peter's river.

ORDER HYMENOPTERA.

XYELA, *Dalman.*

X. *ferruginea.* Ferruginous; thoracic spots and base of the abdomen blackish.

Inhabits Arkansa.

Antennæ fuscous, basal joint ferruginous; above the an-

tennæ and extending between the eyes is a transverse black spot; *thorax* each side above the base of the superior wings with a longitudinal blackish spot, connected behind with a transverse, almost indefinite one; *metathorax* blackish behind; *wings* hyaline, slightly tinged with yellowish, nervures brown; *tergum*, three basal segments black, remaining segments obsoletely blackish on their posterior margins; posterior pairs of tibiæ six-spined, one on the middle, one beyond the middle, and the other at tip.

Length to tip of oviduct seven-twentieths of an inch.

This interesting insect was presented to me by Mr. Thomas Nuttall, who obtained it during his expedition to Arkansa. The forms of some of the wing cellules differ a little from those of the type of this genus. The first radial cellule receives the first recurrent nervure and is nearly square, slightly oblong, and nearly two-thirds the size of the second cellule, which receives no recurrent nervure and is somewhat smaller than the third cellule. The latter receives two recurrent nervures. The cubital cellules are sub-equal, bounded beneath by an almost rectilinear line, the third nearly attains the tip of the wing, leaving the fourth cellule very small. The maxillary palpi also are much shorter than those of the Swedish species. This disposition of the nervures will authorize the formation of a distinct section in the genus.

XIPHYDRIA, *Latr.*

1. X. *abdominalis.* Black; abdomen rufous.

Inhabits Pennsylvania.

Head confluently punctured; *antennæ* short; *vertex* with two distant, longitudinal, yellow spots, and another

transverse one on each cheek above; *thorax* confluently punctured, margined, and with three longitudinal impressed lines distant before; *wings* fuliginous; *abdomen* bright rufous; first segment above blackish; *feet* piceous-black.

Length more than half an inch.

The abdominal colour of this species distinguishes it at once from any other. In *dromedarius* the middle segments of the tergum are rufous, but the terminal and three basal segments are black, and there is a series of whitish lateral spots.

2. X. *tibialis*. Black; four lateral spots of the abdomen, first tarsal joint and base of the tibia white.

Inhabits Pennsylvania.

Stethidium rough with confluent punctures, immaculate; *wings* hyaline, nervures dark fuscous; *feet* black; tibia white, fuscous at tip; tarsi, first joint white; *abdomen* black, three middle segments and penultimate segment, each with a white spot on each side.

Length more than two-fifths of an inch.

This species resembles the *camelus*, Fabr. and UROCERUS *annulatus*, Jur., but is less than half the size of either, and the former, according to authors, has ferruginous feet and a smooth thorax; the latter has a lateral white spot on each of the abdominal segments excepting the penultimate one.

TARPA, *Fabr. Le Peletier.*

T. *scripta*. Black, with white lines and spots; abdomen rufous.

Inhabits North-west Territory and Arkansa.

Hypostoma on its anterior margin, *mandibles* and *palpi*, whitish; line upon the orbits extending from near the an-

tennæ to the occiput and together with an insulated spot each side on the vertex when viewed from behind presenting the form of the figure 3, white; a white slightly oblique spot above the base of each antenna; inferior orbits white; *thorax* with an abbreviated, transverse, angulated line before, slightly interrupted in the middle, a line before each wing and three small spots on the middle placed triangularly, white; *wings* hyaline, nervures fuscous; *feet* yellowish-white; *abdomen* rufous, first segment, and sometimes the tip, black.

Length from more than three-tenths to two-fifths of an inch.

CEPHUS, *Latr.*

1. C. *trimaculatus.* Black; abdomen with a yellowish-white spot each side at the middle.

Inhabits Pennsylvania.

Orbits before, two longitudinal spots on the hypostoma, and base of the mandibles yellowish-white; *wings* brown-black; *metathorax* with a pale greenish, membranaceous, triangular spot behind; *abdomen* on the middle with a transverse oval pale yellowish spot each side.

Length ♂ nearly one-half, ♀ nearly three-fourths of an inch.

Var. α. head immaculate.

Var. β. a very small indistinct spot each side beyond the middle.

In the collection of Mr. William W. Wood, the great difference in point of size between the sexes of this insect, might readily lead to error with respect to their specific identity.

2. C. *abbreviatus.* Black; abdomen rufous at base.

Inhabits Pennsylvania.

♀ *Body* black, polished; *labrum* white, with a dilated, longitudinal, fuscous line; *thorax* with an oblique, white, abbreviated line at the base of the superior wings; *scutel* with a transverse white line; *metathorax* with a longitudinal white triangle; *wings* hyaline, nervures fuscous; the small nervure which divides the first marginal cellule from the first submarginal cellule is abbreviated and does not reach the margin; *feet* pale rufous, tibiæ with a white abbreviated line on the exterior side near the knees; posterior tibiæ and tarsi black; *abdomen* compressed, acutely edged above beyond the middle; first and second segments rufous.

Length seven-twentieths of an inch.

This may be readily distinguished from the preceding species as well by its inferior size and colour, as by the remarkable abbreviation of the dividing nervure of the first marginal and submarginal cellules.

HYLOTOMA, *Latr.*

H. *dulciaria.* ♀ Pale rufous; head, wings, and feet violaceous-black.

Inhabits North-west Territory.

Antennæ black, with a slight violaceous tinge; *pectus* with a large, well defined black spot, tinged with violaceous; *feet* hardly tinged with violaceous; *abdomen* yellow; tail black.

Length to tip of the wings nine-twentieths of an inch.

This species was found by Dr. Bigsby, to whom I am indebted for the specimen. It seems to be allied to the *pectoralis*, Leach, of which, however, the wings are "luteo-hyalinæ."

LOPHYRUS, *Latr. Leach.*

L. *abdominalis.* ♀ Antennæ 18-jointed, pale yellowish; thorax with black spots.

Inhabits North-west Territory.

Head reddish-yellow; a large, transverse, black spot above the antennæ descending on each side between the antennæ and the eyes to the sides of the mouth, and ascending by two distant narrow lines over the vertex to the occiput; *mandibles* piceous at tip; *thorax* with large black spots, occupying the greater portion of the surface; *scutel* pale yellow; *wings* hyaline, nervures and stigmata fuscous; *thighs* dusky at base; *tergum* yellow, tinged with rufous, whitish on the lateral margin; segments piceous on their posterior edges.

Length of the body nearly three-tenths of an inch.

This species seems to be allied to L. *americanus*, Leach, but that insect is stated to have nineteen joints to the antennæ.

NEMATUS, *Jur.*

N. *ventralis.* Black; venter and feet pale.

Inhabits United States.

♂ *Hypostoma*, *palpi* and *mandibles* at base, whitish; *orbits* above and behind piceous; *thorax* dilated, triangular line before the wing, and wing scale, whitish; *wings* slightly dusky, nervures fuscous; feet honey-yellow, posterior tarsi black-brown; *tergum* black, segments each with a yellow band of which the four terminal ones are interrupted in the middle; *venter* pale honey-yellow.

Length one-fourth of an inch.

♀ *Orbits* all round whitish; white line or spot before

the wings with about three obsolete black spots before; *feet* white, thighs black in the middle, posterior tarsi blackish; *tergum* black, the bands obsolete; *venter* white, anal segment blackish.

Length three-tenths of an inch.

Belongs to Nematus, Leach, and to Nematus †††, Le Peletier.

TENTHREDO, *Latr.*

1. T. *basilaris.* Black, hypostoma and basal joint of the antennæ yellow; tergum bifasciate.

Inhabits North-west Territory.

♀ *Body* polished; *hypostoma* emarginate in a curved line, and with the *labrum* and *mandibles* yellow, the latter piceous at tip; *gena* with a yellow line abbreviated above; *tongue* and *palpi* pale yellow; *thorax* with a yellow line before the wings; *scutel* yellow; *metathorax* with two small yellow spots; *wings* tinged with ferruginous; *pleura* with an oblique, dilated line above the intermediate feet, and a rhomboidal spot above the posterior feet, yellow; *anterior feet* greenish-white; *intermediate feet* pale yellowish, a black spot on the thighs near the tip behind; *posterior feet* pale yellowish, thighs and tibiæ annulate with black at tip; *tergum*, first segment white on the posterior margin, fifth segment rufous, penultimate segment with a yellow subtriangular spot on each side, ultimate segment at base, and tail, pale yellow; *venter*, fifth segment rufous.

Length of the body two-fifths of an inch.

♂ *Cheeks* entirely yellow; a yellow spot on the *pleura* above the anterior feet, connected with the thoracic line; *tergum* yellowish-rufous, dusky at tip and black at base; *venter* yellowish-white, dusky at tip.

This species resembles the *bifasciatus*, nob.,* of which the only specimen I have seen is a female. On comparing the two species, it will be observed that the above described insect is larger, and of a somewhat more slender form; the surface of the head and thorax is much more smooth; the rufous band instead of being on the fourth segment, as in that species, is on the fifth, &c.

2. T. *verticalis.* ♀ Head pale yellow; vertex and antennæ black; tergum yellowish, spotted with black, tip black.

Inhabits North-west Territory.

Mandibles piceous at tip; *antennæ* rather long; *vertex* with a somewhat lobated, large black spot, extending by a process down between the antennæ, and connected with another large spot on the occiput; *neck*, a black line each side; *thorax* black, about four oblique, short lines in the centre, and dilated line before each wing, yellow; *wings* hyaline, stigmata and nervures fuscous, costal edge dull yellowish; *scutel* yellow; *metathorax* black, a triangle at base, two dots and behind, yellow; *pleura* black, a yellow spot near the anterior wings and another over the posterior feet; *feet* yellow, slightly varied with pale testaceous; posterior thighs black on the terminal half, their tibiæ black at tip; *tergum* yellow, with a testaceous tinge, second, third, and fourth segments two-spotted on each; those of the anterior one nearly confluent; fifth immaculate, terminal ones black; *venter* pale yellowish, black at tip.

Length of the body three-twentieths of an inch.

3. T. *rufipes.* ♀ Black; mouth yellow; feet rufous.

Inhabits North-west Territory.

Antennæ moderate; *hypostoma* emarginate with a re-

* Western Quarterly Reporter, vol. 2. p. 72.

gularly curved line, pale yellow; *labrum* nearly orbicular, and with the *mandibles* pale yellow, the latter piceous at tip; *stethidium* and *abdomen* black, immaculate; *wings* with fuscous nervures, stigmata, and costal edge; *feet* pale rufous; posterior tarsi and their tibiæ at tip blackish.

Length of the body half an inch.

4. T. *terminalis.* Antennæ white at tip; abdomen testaceous.

Inhabits United States.

♀ *Body* black; *head* testaceous; *vertex* with a blackish longitudinal vitta; *antennæ* black, four last joints white; *stethidium* black; *thorax* with a piceous triangle before, and a large yellow spot behind; *thorax* with two small yellow spots; *wings* tinged with fuliginous; nervures fuscous; carpal spot whitish on the basal half; *pleura* with a large testaceous spot beneath the superior wings; *feet* testaceous, coxæ black, tip of the posterior coxæ white; *abdomen* entirely testaceous.

♂ Tip of the antennæ pale yellowish; superior orbits with a white sagittate spot; occiput each side with a white spot; instead of the piceous triangle of the thorax is a white V-like spot; pleura testaceous; pectus testaceous. disk and posterior coxæ at base black.

Length seven-twentieths of an inch.

The white terminal joints of the antennæ of this species are very distinct and striking.

5. T. *pygmæa.* Black; thorax rufous before; feet white.

Inhabits United States.

♂ ♀ *Body* polished; *hypostoma* obscure whitish; *thorax*, anterior segment rufous, collar dusky; *wings* dusky; *feet* white; thighs blackish in the middle behind; posterior tibiæ and tarsi black.

Length ♂ one fifth of an inch, ♀ rather more.

DOLERUS, *Jur.*

1. D. *inornatus.* Body black, polished; feet white, tarsi dusky.

Inhabits United States.

♀ *Labrum* and *palpi* whitish; *thorax* with a line before the wings and wing-scale, white; *scutel* with a small bullate white spot on each side; *wings* a little dusky; nervures blackish-fuscous; pleura with an abbreviated white line over the intermediate feet; *coxæ* colour of the feet.

Length one-fourth of an inch.

This species belongs to DOLERUS †† of *Le Peletier*, EMPHYTUS, *Leach.*

2. D. *arvensis.* Blackish-violaceous; thorax rufous, a spot before and triangular spot behind, black.

Inhabits United States.

♀ *Antennæ* black; *palpi* and *mandibles* black; *head* black with a violaceous tinge; *thorax* with a longitudinal spot from the collar to the middle, a small spot over the wing, posterior margin connected with a spot, black; *metathorax* black; *wings* dusky; *pleura* and *pectus* black, tinged with violaceous, the former rufous at the humerus, this colour being connected with that of the thorax; *feet* black; *abdomen* dark-violaceous.

Length more than seven-twentieths of an inch.

Var. α. black spot above the wing enlarged and reaching the dorsal spot.

This species belongs to HYLOTOMA, *Fabr.* DOSYTHAEUS, *Leach*, and DOLERUS, ††† *Le Peletier.* It is found in the North-west Territory, Pennsylvania, and Arkansa. This species is closely allied to TENTHREDO *thoracina*, Beauv. but it does not fully agree with his figure, and his description is two unessential to be useful.

3. D. *sericeus*. Entirely black, immaculate.

Inhabits United States.

♂ ♀ *Body*, particularly the *venter* and *feet*, sericeous, with short hairs; *wings* dusky; *tergum* glabrous, polished.

Length seven-twentieths of an inch.

Belongs to the same division with the preceding species.

It is found as far south and west as Arkansa. It resembles TENTHREDO *unicolor*, Beauv. but is somewhat larger, the three last joints of the antennæ are differently formed, and the wings are dusky.

EVANIA, *Fabr.*

E. *unicolor*. Entirely black, immaculate, slightly sericeous.

Inhabits United States.

Antennæ as long as the body; *palpi* piceous; *thorax* with very few, small punctures; *metathorax* densely punctured; *wings* hyaline, nervures fuscous; a distinct nervure passes from the dividing nervure of the cubital and discoidal cellules to the posterior margin of the wing; *abdomen* much compressed, impunctured, polished, oval, rather longer than the petiole; *posterior feet* elongated.

Length more than three-tenths of an inch.

The proportions of the petiole, abdomen, and posterior feet of this insect are nearly the same with those of *appendigaster*, Fabr. I obtained a specimen near the Rocky Mountains, and it is also found in Pennsylvania. The additional nervure is sometimes connected with the radial cellule by a faint, transverse nervure, so as to form a second cubital cellule.

FOENUS, *Fabr.*

F. *tarsatorius.* Black; feet pale rufous; posterior tibia blackish, at base white.

Inhabits Pennsylvania.

Antennæ black-testaceous beneath towards the tip; *mandibles* testaceous, at tip black; *hypostoma* each side silvery; *stethidium* immaculate, confluently punctured; *wings* hyaline, nervures fuscous; *anterior and intermediate feet* pale rufous, the tibiæ with a whitish line, the base of the tarsi white; *posterior feet* piceous, tibiæ blackish, clavate, a white band near the base, which is much dilated before; tarsi white at base, the first joint with a black origin; *abdomen* blackish, with about three dull testaceous spots on each side; *oviduct* pale testaceous; valves blackish, at tip whitish.

Length of the body eleven-twentieths of an inch.

SIGALPHUS, *Latr.*

1. S. *sericeus.* ♀ Black; tergum sericeous; tibia ochreous at base.

Inhabits North-west Territory.

Head with dilated, transversely confluent punctures; *nasus* minutely punctured; *thorax* with much dilated, irregularly confluent punctures; *scutel* polished, almost impunctured on the disk, lateral margin grooved; *wings* slightly fuliginous, nervures fuscous, those of the base very pale brownish; *metathorax* with very large, somewhat discoidal punctures; *tergum* without obvious incisures, black, covered with short, dense, cinereous, sericeous hair; obtuse at tip; *venter* excavated; *anterior pairs of feet* black, se-

riceous, with ochreous tibiæ and tips of the thighs; *posterior pair* black, sericeous, tibiæ ochreous at base.

Length one-fourth to nearly three-tenths of an inch.

Very like the *sulcatus*, Jurine, but is much larger; it differs from ICHNEUMON *oculator*, Fabr. by being immaculate, and from CRYPTUS *irrorator*, Fabr. by the oval form of its abdomen.

2. S. *basilaris*. Black; base of the antennæ and feet pale yellowish.

Inhabits Pennsylvania.

Head punctured; *antennæ*, first and second joints pale yellowish; *mandibles* yellowish; *palpi* white; *thorax* punctured; *scutel*, *metathorax*, and *tergum* at base longitudinally wrinkled; *wings* hyaline, pale yellowish at base; nervures fuscous; *feet* pale yellowish, tips of the tarsi dusky.

Length nearly one-fifth of an inch.

This species is in the collection of Mr. William W. Wood. It is much smaller than the preceding species and readily distinguished by the colour of the basal joints of the antennæ and of the feet.

BRACON, *Jur.*

1. B. *tibiator*. Black; wings fuscous at tip.

Inhabits Pennsylvania.

♀ *Wings* hyaline, nervures robust, fuscous; tip including the extremity of the second submarginal cellule, fuscous; *feet*, anterior pair of tibiæ and tarsi yellowish-white; intermediate tarsi whitish; posterior pairs of tibiæ white at base.

Length of the body one-fifth of an inch.

2. B. *populator*. Black; abdomen red; wings dark fuliginous.

Inhabits United States.

♂ ♀ *Metathorax* rough, with confluent punctures; *abdomen* entirely reddish-fulvous; *oviduct* black, longer than the abdomen.

Length of the body two-fifths of an inch.

A very common insect in many parts of the United States. The head and stethidium are sometimes dark piceous with the anterior portion of the thorax black. It resembles B. *initiator*, Fabr.

3. B. *ligator*. Black, abdomen and feet rufous, antennæ with a white annulus.

Inhabits Pennsylvania.

♀ *Vertex* and *occiput* impunctured; annulus of the *antennæ* placed beyond the middle; *palpi* piceous; *stethidium* with confluent punctures; *thorax* with two dilated, abbreviated, longitudinal, dull rufous lines; *scutel* with a dilated, longitudinal, dull rufous line; *wings* hyaline, nervures fuscous; *metathorax* dull rufous; *feet* rufous, tarsi blackish at tip; *posterior thighs* with a strong tooth beneath near the tip; *posterior tibiæ* fuscous; *posterior tarsi* whitish; *tergum* punctured, glabrous at tip; *oviduct* blackish.

Length seven-twentieths of an inch.

4. B. *stigmator*. Dark yellowish-rufous; metathorax and first segment of the tergum black.

Inhabits North-west Territory.

Antennæ as long as the body, dusky towards the tip; *vertex* between the stemmata black; *occiput* all round the neck, blackish; *metathorax* above and on the sides black; *pleura* with a blackish, dilated, longitudinal line; *pectus* with a blackish, dilated line before the anterior feet, reach-

ing near the head; *wings* hyaline; nervures fuscous; stigmata rather large, triangular, fuscous, dull white at the anterior and posterior tips, and also on the costal edge; *tergum* paler, disk of the first segment blackish.

Length less than one-fifth of an inch.

This insect is one of the many species that deposit their eggs in great numbers in the larva of Lepidopterous insects. In a dead and dried larva, which I found adhering to a tree, were the follicles of forty or fifty individuals of this species. It varies somewhat in the quantity of the black colouring with which it is marked. In some specimens this extends not only along the pectus, but is continued in a capillary line along the edge of the thorax, the metathorax also is entirely black, the tergum is blackish at tip and on the sides, the pectus has a black spot in the middle, and the hypostoma has a transverse, blackish spot.

STEPHANUS, *Jur.*

S. *rufipes*. Black; abdomen sessile; thorax not remarkably attenuated before.

Inhabits Pennsylvania.

Body somewhat sericeous; *palpi* pale yellowish; *scutel* with a groove on each side, rough; *metathorax* rough, and with two slightly elevated, longitudinal, distant lines; *wings* hyaline; a large, triangular, fuscous, carpal spot; *feet* rufous; posterior pair of tarsi dusky; *abdomen* a little rough at base; *oviduct* as long as the abdomen.

Length one-fifth of an inch.

Although the arrangement of the wing nervures agrees precisely with S. *coronatus*, Jur., yet the form of the body differs materially, the thorax not exhibiting the remark

able attenuation before, and the abdominal petiole is not visible.

ACAENITUS, *Latr.*

(Anomalon, Jur.)

A. *stigmapterus.* ♀ Black; incisures of the feet white.

Inhabits North-west Territory.

Thorax densely punctured; two dilated grooves confluent behind; *scutel* united to the thorax by a carinated line each side; *wings* tinged with fuliginous; nervures blackish; stigma terminated before by a small white spot; *metathorax* with large confluent punctures; terminated on each side behind by a short conic process; *pleura* and *pectus* polished; *tibiæ* at base, first joint of the tarsi at base, and near the tip of the tarsi, white.

Length more than one inch.

Well distinguished by the white points on the wings, and the white annulations of the feet. The head in my specimen is deficient.

IBALIA, *Latr.*

I. *anceps.* Dull ferruginous; wings blackish; abdomen piceous.

Inhabits Arkansa and St. Peter's rivers.

Head with a black curved line at base of the antennæ; *collar* abruptly elevated at the anterior edge, and slightly emarginate in the middle; near the neck black; *thorax* transversely wrinkled, and with three longitudinal impressed distant lines, of which the intermediate one is black, and the lateral ones black on the exterior side; *scutel* scabrous, abruptly elevated at tip, and emarginated;

metathorax scabrous, black on the disk; *wings* fuliginous-black; *pleura* and *pectus* blackish, the former with an obsolete, longitudinal line beneath the wings; *thighs* piceous in the middle; posterior pair black in the middle; *abdomen* compressed almost to flatness, piceous-black, margins of the segments paler; elongate-oval; rounded, but sharp-edged at tip; *tergum* and *venter* also with sharp edges.

Length nearly seven-tenths of an inch.

This species is not of very common occurrence. It is very closely allied to BANCHUS *cultellator*, Fabr.

CHALCIS, *Fabr. Latr.*

1. C. *microgaster*. Slender, black; anterior pairs of feet and posterior tarsi, yellowish; peduncle as long as the abdomen.

Inhabits Pennsylvania.

Stethidium with dilated, dense punctures; *metathorax* with an angulated line above the insertion of the abdomen; *wings* hyaline, costal nervure fuscous; *posterior feet* black; tarsi yellowish; first joint of the coxæ with a small acute tooth above near the tip; thighs as large as the abdomen, with numerous, small, regular teeth on the posterior edge; *tibiæ*, terminal spine longer than the first joint of the tarsi; *abdomen* polished, a little compressed, triangular, the superior angle rounded.

Length less than one-fifth of an inch.

2. C. *ovata*. Robust, black; feet yellow, thighs black at base, head with a golden reflection.

Inhabits Ohio and Pennsylvania.

Head black, with golden sericeous hair, which is indistinct on the vertex; *antennæ* testaceous beneath towards the tip; *stethidium* with dilated, dense punctures, a little

sericeous with golden hair; scale covering the base of the wings yellow; *wings* hyaline; nervures fuscous, at base pale yellowish; *feet* bright yellow; basal half of the anterior pairs of thighs black; posterior thighs smaller than the abdomen, black, with a yellow spot on the tip above, dentated on the posterior edge; posterior tibia piceous on its basal incisure; terminal spine robust, shorter than the first tarsal joint; first joint of the posterior coxæ with a robust tooth above near the tip; *abdomen* subovate, polished; first segment nearly glabrous, second segment hairy on each side, remaining segments hairy near their tips.

Length one-fifth of an inch.

LEUCOSPIS, *Fabr.*

L. *affinis.* Abdomen sessile; oviduct as long as the abdomen; black, varied with yellow; collar each side and behind margined with yellow, and with an abbreviated, transverse, yellow line on the anterior submargin.

Inhabits Pennsylvania.

♂ *Body* densely punctured; *antennæ*, basal joint yellow; *collar* margined each side and behind with yellow, the yellow abbreviated line on the anterior submargin is about half the width of the collar; *thorax*, incisure at the base of the wing dull yellow; *scutel* with a transverse yellow line; *wings* brownish; *pleura*, a yellow line over the insertion of the posterior feet; *feet* yellowish, thighs dusky or black at base; posterior thighs black, with a yellow spot at base and another at tip on the exterior side; posterior coxæ testaceous at tip; *tergum* with three nearly equal bands, and an oval, longitudinal spot near the tip, yellow; *venter* with a yellow spot each side, opposite to the termination of the third band of the tergum.

♀ Resembles the male, but the bands of the tergum are more dilated than those of the male, and the first is interrupted by the groove of the oviduct; the second band is reduced to a small lateral spot; the yellow spot at tip is divided by the groove of the oviduct; the venter is immaculate, and posterior thighs are piceous on the inner side.

Length rather more than three-tenths of an inch.

This species is very closely allied to the *dorsigera* and *gigas*, but more particularly to the former; it is much smaller than the *gigas*, and differs from both in many respects, and more obviously in the circumstance of the anterior margin of the collar being black, with an abbreviated yellow line on the submargin.

I observed this species running actively over the surface of a rafter in a barn, very busily feeling with its antennæ for a proper situation to deposit its eggs. Having found a suitable place, the insect, after some exertion, suddenly disengaged its oviduct from the groove and valves, and gradually thrust the instrument into the wood, nearly to the base; then having for a short time remained at rest, probably in order to protrude the egg, the oviduct was withdrawn, adjusted in its dorsal groove; and the insect proceeded again as before, in search of another spot suitable for its purpose. I could not ascertain the kind of larvæ, within the wood, that received these eggs.

PSILUS, *Jur.*

P. *brevicornis.* Black, polished, immaculate; tibiæ and tarsi piceous.

Inhabits St. Peter's river.

Antennæ short, first joint much elongated, second joint longer than the remaining ones, which are subcylindric-

quadrate; *mandibles* pale testaceous; *thorax* convex, rounded, two faint impressed lines each side behind converging to the scutel, and on the posterior margin two indistinct dull whitish spots; *scutel* elevated, convex; *feet* dark piceous; thighs nearly black; *wings*, costal nervure indistinct; *abdomen* depressed fusiform, acute at tip.

Length more than one-twentieth of an inch.

BETHYLUS, *Latr.*

B. *rufipes.* Black; antennæ and feet rufous.

Inhabits North-west Territory.

Body slender, polished, black; *mouth* rufous; *thorax* punctured; *wing joint* ochreous; *abdomen*, incisures and terminal segment obscurely piceous.

Length less than one-fifth of an inch.

This insect is also an inhabitant of Missouri.

PROCTOTRUPES, *Latr.*

P. *caudatus.* Pale testaceous; oviduct as long as the abdomen.

Inhabits North-west Territory.

Head with a blackish, transverse line between the antennæ; *thorax* and *scutel* impunctured; *wings* hyaline, with a very slight ochreous tinge, stigmata very distinct, and with the costal nervures fuscous, the other nervures light brownish, the process of the radial nervure continued transversely to the middle of the disk of the wing, is not only extended from that point to the extremity of the wing, but also towards the base of the wing, terminating in this direction at the first transverse nervure.

Length of the body nearly two-fifths of an inch.

This species was also found in Missouri.

HEDYCHRUM, *Latr.*

1. H. *ventrale.* Green polished; tergum tinged with blue; antennæ blackish at tip; venter bronze.

Inhabits Pennsylvania.

Antennæ, excepting the first joint, blackish-brown; *front* impressed; *stethidium* with dilated punctures; *thorax* in the middle between the wings, with a purplish shade; *wings* dusky, nervures fuscous; *tarsi*, excepting the basal joint, dark brownish; *tergum* passing to bluish-purple towards the tip; tip very obtusely rounded, terminal segment longer than the preceding one; *venter* entirely dull bronzed.

Length more than one-fourth of an inch.

2. H. *dimidiatum.* Green polished; posterior half of the venter bronze.

Inhabits Pennsylvania.

Antennæ, excepting the basal joint, and *palpi*, brownish-black; *front* somewhat impressed; *vertex* between the stemmata dark purplish; *stethidium* with dilated punctures; *thorax* longitudinally on the disk dark purplish; *wings* dusky, nervures fuscous; *tarsi* dark brownish; *tergum* longitudinally in the middle slightly tinged with bluish, ultimate segment less than half the length of the preceding one; *venter* green, posterior half coppery.

Length nearly three-tenths of an inch.

From the collection of Mr. William W. Wood.

MYRMOSA, *Latr.*

M. *unicolor.* Black; abdomen with cinereous hair; metathorax with an impressed line.

Inhabits North-west Territory.

Head with short cinereous hair, somewhat longer about the mouth; densely punctured; *thorax* and *scutel* densely punctured, and with scattered cinereous short hair; posterior segment of the former with two light parallel impressed lines; *wings* hyaline, nervures fuscous; *metathorax* with a longitudinal, impressed, very distinct line; and a transverse one at base; hair more obvious each side; punctures smaller than those of the thorax; *abdomen* more hairy than any other part of the body.

Length three-tenths of an inch.

This insect also occurred on the Missouri, at Engineer Cantonment, and in Pennsylvania.

TIPHIA, *Fabr.*

1. T. *inornata.* Black, immaculate; wings yellowish-fuliginous.

Inhabits Ohio and Pennsylvania.

Head punctured; *antennæ* piceous, paler towards the tip; *mandibles* piceous, blackish at tip; *thorax* punctured, wing-scale and posterior margin of the first segment impunctured, edge of the latter piceous; *metathorax* with three longitudinal, slightly elevated lines; posterior edge also slightly elevated into an acute line; *feet* hairy, tibiæ and tarsi more or less piceous; *abdomen*, particularly behind, hairy.

Length three-fifths of an inch.

2. T. *interrupta.* Black, stethidium with yellow spots; tergum with yellow spots and bands.

Inhabits Pennsylvania.

Antennæ dull black-brown, first joint polished, piceous at tip; *mandibles* piceous, black at tip; *thorax* with a spot each side before, three in a line between the origin of the superior wings, yellow; *scutel* with a yellow, transverse line; *wings* hyaline, costal margin fuliginous; *metathorax* at the tip each side with a double, longitudinal, yellow spot: *pleura* with a vertical, yellow, oblong spot beneath the origin of the superior wing; *tarsi* pale piceous; *tibiæ*, anterior pair blackish-piceous, posterior pairs pale piceous; *thighs* black; *tergum* a little iridescent; first segment with a band abruptly and widely narrowed above; second segment with an oval spot each side; third segment, band gradually narrowed in the middle; fourth and fifth segments, bands slightly interrupted; *venter* immaculate.

Length nine-twentieths of an inch.

In the collection of Mr. William W. Wood.

This species would seem to be allied to the *serena*, judging by the description that Fabricius gives of that insect, particularly as he describes the costal margin of the wings to be fuscous. That insect, however, is stated to be only a little smaller than the *nanea* of the same author, a size which at once puts that species out of the question.

POMPILUS, *Fab. Latr.*

1. P. *fascipennis.* Black; wings hyaline, with a fuscous band near the tip; abdomen rufous at base.

Inhabits United States.

♀ *Hypostoma*, and inferior portion of the *front*, with

numerous silvery hairs; *wings* with fuscous nervures; a fuscous band including nearly all the radial cellule, and not reaching the posterior angle; tip slightly margined with fuscous; posterior thighs and tibiæ at base rufous; *abdomen* sessile, first and second segments rufous.

Length about three-tenths of an inch.

2. P. *marginatus.* Black; wings dusky, with a broad, darker posterior margin; abdomen sessile, first and second segments rufous.

Inhabits North-west Territory and Missouri.

♀ The terminal dark margin of the wings is so broad as to reach almost to the terminal cubical cellule, and passes round on the costal margin to the origin of the radial cellule; on the inferior wings is also a broad, terminal, darker margin.

Length two-fifths of an inch.

Very similar to the preceding, but manifestly distinct by the above characters.

CEROPALES, *Latr.*

1. C. *fasciata.* Black; thorax and tergum spotted and banded with pale yellowish; feet ochreous, tarsi pale yellow.

Inhabits United States.

Front, *labrum*, and *orbits* yellow, the latter interrupted above; *thorax* punctured; anterior margin, a spot each side near the head, a longitudinal, abbreviated, central line, yellow; *scutel* with a spot on the disk, and another transverse one beneath its tip, yellow; *wings* immaculate, nervures blackish; *pectus* with a yellowish spot over the intermediate and another over the posterior feet; *coxæ*, first joint with a dilated yellow line; *posterior feet* elongated; *ter-*

gum polished; first segment with a rather large, yellow spot on each side, angulated before; second, third, fourth, and fifth, with each a yellow band, slightly interrupted in the middle, and at its termination on each side dilated into a spot; sixth segment dull ochreous; tail piceous.

Length nearly two-fifths of an inch.

This insect has considerable resemblance to the *macularia*, Fabr. but the longitudinal thoracic line, scutellar spot, the form and number of the bands of the tergum, &c. sufficiently distinguish it. It is more especially found in Missouri.

2. C. *ferruginea*. Ferruginous; wings violet; pleura and metathorax black.

Inhabits United States.

♂ *Antennæ* beyond the third joint, gradually shaded into fuscous; *mandibles*, the two teeth black; *thorax*, middle segment with a black anterior margin; posterior segment, and *scutel*, black on each side; *wings* decidedly violaceous; *posterior coxæ* at base black; *tergum*, first segment at base and tip, and second segment at tip, black.

Length less than three-fifths of an inch.

3. C. *bipunctata*. Black; wings dark violaceous; posterior thighs bright rufous in the middle; a small yellow dot each side at the tip of the metathorax.

Inhabits United States.

♂ *Hypostoma*, *labrum*, *anterior orbits*, and line on the basal joint of the *antennæ* before, yellow; *mandibles* piceous; *palpi* pale; *collar* yellow on the posterior margin, and with the *thorax* and *scutel* with somewhat distant punctures; *wings* violaceous; *posterior thighs*, excepting at base and tip, bright rufous.

Length from one-half to three-fourths of an inch.

♀ *Hypostoma* and *labrum* black, the *anterior orbits*

only yellow; *collar* destitute of the yellow margin behind. Smaller than the female.

This species may readily be distinguished by the two small, bright, yellow dots at tip each side of the metathorax, and the bright colour of the posterior thighs. It varies considerably in size.

BEMBEX, *Fabr. Panz.*

B. *monodonta.* Black; tergum with dilated, greenish-yellow bands.

Inhabits Pennsylvania.

Front and *vertex* with cinereous hair; *labrum* with a greenish, oblong, margined spot each side, near the base; *thorax* hardly hairy; anterior edge, terminating in a spot on the pleura; an oblique, abbreviated line above the origin of the wings, terminating in a comma-formed spot behind, greenish-yellow; *metathorax*, a transverse, rectilinear line at base, and an arcuated one at base, slightly interrupted in the middle, greenish-yellow; *thighs*, at tip, *tibiæ* and base of the *tarsi*, pale yellowish; tips of the latter dusky; a dilated black line near the tip of the anterior tibiæ; *wings* hyaline; *tergum* with six yellow and green bands, which occupy more than two-thirds of the surface; first band bilobate before, yellow, with a broad green posterior margin; remaining bands somewhat dentated before; the second and third bands yellow, with a green central dash; fourth and fifth bands yellow, their anterior margins green; terminal band entirely yellow; *venter* entirely black; a single elevation on the second segment.

Length ♂ half an inch.

In the collection of Mr. William W. Wood.

MONEDULA, *Latr.*

1. M. 4-*fasciata.* Black, obscurely iridescent; tergum with four bands, interrupted and narrowed in the middle.

Inhabits Pennsylvania.

Antennæ with the basal joint beneath yellow; *orbits* anteriorly, *hypostoma* and *labrum*, yellow; the latter margined each side with piceous, and the hypostoma has a more or less dilated black spot above; *mandibles* blackish-piceous; *thorax* with a capillary line before; *wings* hyaline, slightly fuliginous, nervures fuscous; *metathorax* at tip each side compressed and yellow; *pleura* with a whitish spot over the anterior feet, and from one to three yellowish approximate spots above the middle; *feet* pale yellowish; thighs black on the basal two-thirds, those of the anterior feet black only on the exterior side; *tergum* with four yellow bands, dilated on the sides, and gradually narrowing to the middle of the back, where they are slightly interrupted, the terminal one widely interrupted; two terminal segments with large punctures each side and at base; *venter* with three small yellow spots each side near the middle; ♂ with an obsolete spot each side on the two segments beyond the bands, and the anus is three-spined, of which the lateral ones are curved, and ♀ with an obsolete, yellowish line before the wings on each side.

Length ♂ three-fifths, ♀ nearly seven-tenths of an inch.

This species is in the collection of Mr. William W. Wood. The hypostoma of the male specimen is occupied by the black basal spot, excepting on its anterior margin. The bands of the abdomen in this species are not at all dentated.

2. M. *ventralis.* Black, obscurely iridescent; tergum

with about five yellow bands, interrupted, but not narrowed in the middle.

Inhabits Pennsylvania.

♂ *Orbits* anteriorly obsoletely tinged with dull yellowish; *antennæ*, first joint beneath yellow; *hypostoma*, *labrum*, and *mandibles* black; *palpi* whitish; *thorax* punctured; a line on the anterior edge, with a spot at tip on the pleura, and a small, longitudinal, oval spot each side above the inferior wings, yellow; *scutel* with a transverse yellow line; *metathorax* at tip each side compressed and yellow; *wings* hyaline, very slightly tinged with fuliginous; nervures fuscous; *feet* yellowish; thighs black from the base to near the knee, first pair on the anterior side only the basal half black; *tergum* with about five or six yellow bands, which are rather wider on the back and interrupted by a very narrow space; excepting the first band which is slightly undulated, slightly narrowed on the back, and interrupted by a wider space; the ultimate bands narrowed each side and interrupted near a spot on the lateral margin; terminal segment with large, dense punctures, as numerous on the disk as upon the sides; anus three-spined, of which the lateral ones are curved; *venter* each side with a triangular spot at the tip of each of the dorsal bands excepting the first.

Length nearly half an inch.

I have not seen the female, the male is in the collection of Mr. William W. Wood.

ASTATA, *Latr.*

A. *unicolor*. Deep black, immaculate; wings dusky at tip.

Inhabits North-west Territory and Missouri.

♀ *Head* with rather long, silvery hair; *thorax* and *scutel* with remote punctures, the former with a very slight appearance of longitudinal lines before, the latter with a longitudinal, impressed line at tip; *metathorax* with dense, dilated punctures; *wings* hyaline, with a broad, dusky tip, nervures black; *tarsi* piceous; *abdomen* polished, immaculate.

Length less than half an inch.

OXYBELUS, *Latr.*

O. 4-*notatus.* Black; tergum with a slight, whitish, abbreviated line on each side of the first and second segments.

Inhabits Pennsylvania.

Antennæ towards the tip beneath, *stethidium,* immaculate; *wings* hyaline, nervures brown; *metathorax* and *scutel* each with three raised lines, two superior spines of the former whitish at tip, decurved; inferior spine larger, black; *tarsi* testaceous at tip; *anterior tibiæ* testaceous on the inner side; *tergum* polished; lateral abbreviated line of the first segment much more distinct than that of the second.

Length nearly one-fourth of an inch.

GORYTES, *Latr.*

G. *bipunctatus.* Black, collar and scutel with a white line; tergum with two white spots.

Inhabits Pennsylvania.

Hypostoma silvery white; basal joint of the *antennæ* before, exterior base of the *mandibles* and *palpi,* white; line of the *collar* capillary, of the *scutel* broader, abbrevi-

ated; *wings* hyaline, nervures fuscous; *pleura* with a small dot before the wing; *feet* black; *tibiæ* sericeous, white on the exterior base; *tarsi* white; *tergum*, second segment at tip each side with a small white spot.

Length three-tenths of an inch.

This species corresponds in its generic characters precisely with ARPACTUS, Jurine, and of course possesses those oblique parallel lines of the metathorax which Jurine mentions as distinguishing this genus.

PEMPHREDON, *Latr. Fabr.*

1. P. *concolor*. Black, minutely punctured; metathorax with dilated punctures; abdomen glabrous.

Inhabits North-west Territory.

Head with minute pubescence, more distinct on the front; *mandibles* obtusely bifid at tip, immediately above which are two obtuse teeth; punctures minute, sparse on the vertex; *thorax* with a slightly impressed, longitudinal line, from which proceed numerous, minute wrinkles, curving outwards and backwards; punctures larger than those of the head; *wings* slightly fuliginous, nervures blackish; *metathorax* with dilated punctures, or slightly impressed cavities; *feet* somewhat sericeous; *abdomen* polished, impunctured; petiole moderate.

Length of the body nearly seven-twentieths of an inch.

This is allied to P. *unicolor*, Fabr.

2. P. *inornatus*. Black, immaculate, punctured; abdomen impunctured, polished; petiole nearly one-third the length of the abdomen.

Inhabits Pennsylvania.

Wings hyaline, very slightly tinged with dusky, the

first submarginal cellule receives the two recurrent nervures; nervures dark fuscous; stigma rather large.

Length less than three-tenths of an inch.

STIGMUS, *Jur. Latr.*

S. *fraternus.* Black, antennæ and feet yellowish.

Inhabits Pennsylvania.

Body deep black, polished, not obviously punctured; *mandibles* and *palpi* whitish; *wings* hyaline, nervures pale brown, stigma piceous-black, whitish at base; origin of the wings yellowish; *pleura* with a white spot rather before the origin of the wings; *feet* immaculate; *venter* whitish at tip.

Length rather more than three-twentieths of an inch.

This species is in the collection of Mr. William W. Wood. It is closely allied to the *ater* of authors, the petiole of the abdomen, however, is proportionably longer.

CRABRO, *Fabr. Latr.*

1. C. *tibialis.* Black, polished; thoracic line, scutel, knees, and tibiæ, yellow; abdomen with piceous incisures.

Inhabits Pennsylvania.

♀ *Head* with a slightly impressed frontal line, extending to the stemmata; *antennæ*, basal joint yellow; *hypostoma* silvery, brilliant; *thorax* with a transverse, yellow line on the collar, not extending to the postpectus; *scutel* yellow; *wings* hyaline; nervures fuscous, those of the disk pale at base; *metathorax* slightly carinated each side with a longitudinal, impressed line, which is a little dilated beyond the middle, and a slight transverse line on the mid-

dle; *pleura* immaculate; *tarsi* slightly tinged with testaceous; *posterior* pair entirely black; *abdomen* rather long, blackish-piceous; incisures edged behind with pale-piceous, the second segment above margined behind with pale-piceous.

Length three-tenths of an inch.

A small species in the collection of Mr. William W. Wood.

2. C. *scutellatus.* Black, polished; thoracic line, scutel, knees, and tibiæ, yellow; abdomen totally black.

Inhabits Pennsylvania.

Length ♀ one-fifth of an inch.

This species closely resembles the preceding, but is smaller; the abdomen proportionally shorter, and entirely black; the yellow line of the collar extends to a yellow spot at the commencement of the pleura; the transverse line of the metathorax is much more profoundly indented, and a transverse punctured line is far more obvious than in the preceding; the intermediate and posterior tibiæ have a black spot near the tip.

3. C. 6-*maculatus.* Black; tergum with three yellow spots on each side.

Inhabits Pennsylvania.

♀ *Antennæ*, basal joint yellow; *mandibles* at base yellow; *hypostoma* silvery, brilliant; *thorax* with a yellow band on the collar, interrupted in the middle; two parallel, abbreviated, transverse, equal, yellow lines behind; *wings* dusky; *pleura* with two, equal, rounded, yellow spots, one of which is beneath the superior wing and the other before it; *thighs* black, knees yellowish; *tibiæ* yellow with a black or piceous spot on the inner side; *tarsi* tinged with rufous; *tergum* on the second, fourth and fifth segments with a transversely oval spot.

Length three-tenths of an inch.

4. C. *trifasciatus.* Black; scutel, two spots on the collar, base of the antennæ and lateral spots of the tergum, yellow.

Inhabits North-west Territory.

Body with numerous, short hairs; *hypostoma* silvery; first joint of the *antennæ* and middle of the mandibles, yellow; *thorax* punctured; *collar* with two yellow spots; *scutel* yellow; *metathorax* with dilated, confluent punctures, and an impressed longitudinal line; *wings* fuliginous, nervures brown; *pectus* with a yellow spot before the wings; *feet* yellow, thighs, and a line on the inner side of the tibiæ, black; tarsi dusky at tip; *tergum* polished, impunctured; a yellow band on the middle of the second segment interrupted above; a short yellow line each side of the third segment; a yellow band on the fourth segment, slightly interrupted above; a yellow band on the fifth segment, not interrupted but only slightly emarginate above; *venter* immaculate.

Length two-fifths of an inch nearly.

PHILANTHUS, *Fabr. Latr.*

1. P. *punctatus.* Black; head and thorax with yellow spots; tergum with large punctures and four yellow bands.

Inhabits Pennsylvania.

♂ *Eyes* very slightly emarginate; a longitudinal line each side of the hypostoma, a triangular spot on the middle of the anterior margin, another on the front, a small rounded spot on the basal joint of the antennæ before, a small dot each side on the vertex, and another behind each eye, yellowish-rufous; *thorax* uneven, with large profound punctures; a line on the collar, another on the scutel, be-

fore which is a smaller one, and wing-scale, yellow; *wings* fuliginous; *pleura* with a double yellow spot beneath the anterior wing; *feet* honey-yellow, thighs black at base, tibiæ bright yellow before; *tergum* rough with large profound punctures; first segment rounded, immaculate; second with a broad, yellow, slightly arcuated line, touching the anterior edge and curving towards the posterior angles; third, fourth, and fifth segments, each with a narrow, dull yellow band on the posterior margin; venter immaculate.

Length less than two-fifths of an inch.

2. P. *politus*. Black, polished; tergum, first segment with two whitish spots, the other segments with a spot each side, connected by a whitish band.

Inhabits Pennsylvania.

Hypostoma, mandibles at base, and anterior *orbits* as high as the emargination, whitish; *antennæ* beneath beyond the third joint, rufous-brown, a whitish spot on the basal joint; *thorax* with small, irregular punctures; *collar* with two transverse spots; *wing-scale*, and transverse line on the *scutel*, whitish; *wings* a little dusky towards the tip; *pleura*, a double whitish spot beneath the superior wings; *thighs* black; *knees* and *tibiæ* excepting a black line on the inner side, whitish; *tarsi* dusky; *tergum* polished, first segment with a transverse ovate spot each side; remaining segments each with a transverse quadrate spot each side, touching the posterior margin and connected along this margin by a band, which is transversely thicker in the middle.

Length more than seven-twentieths of an inch.

CERCERIS, *Latr.*

C. *deserta*. Black; hypostoma, feet, and bands of the tergum, yellow.

Inhabits North-west Territory, Missouri, and Pennsylvania.

♂ *Hypostoma* entirely yellow; *antennæ* yellow before, dark brown behind; *collar* with two transverse yellow spots; *scutel* with a transverse line, yellow; *wings* hyaline, brownish on the costal margin near the tip; *feet* yellow; anterior thighs black on the posterior middle, intermediate thighs on the posterior base and posterior thighs at tip, black; *tergum*, first joint rounded with a spot each side; second and third segments with each a band on the posterior margins slightly and widely emarginate before, remaining segments with each a narrower band on their posterior margins, yellow; *venter*, three or four first segments with each a lateral, triangular, yellow spot.

Length more than two-fifths of an inch.

Var. α. metathorax with a yellow, oblique line each side behind; first joint of the tergum immaculate.

Var. β. metathorax and first joint of the tergum immaculate; bands of the tergum excepting the first, very narrow, linear; ventral spots obsolete; feet with a larger proportion of the black colour.

Var. ϵ. a small yellow spot each side before the tip of the scutellar line.

EUMENES, *Latr.*

1. E. *fraterna.* Black; hypostoma, anterior thoracic margin, scutellar line, posterior submargins of the segments of the tergum, and two spots on the second segment, yellow.

Inhabits United States.

Body polished, punctured; *hypostoma* emarginate, and with a line between the antennæ, pale yellow; *antennæ*,

basal joint with a whitish line before; *thoraæ* with the anterior margin somewhat contracted in the middle, yellow; *scutel* yellow; *wings* fuliginous; *thighs* black, yellowish at the knee joint; *tibiæ* whitish, a black line near the tip; *tarsi* pale yellowish, dusky towards the tip; *tergum*, first segment with a subbidentate yellow band on the posterior margin; second segment with a yellow band on the posterior submargin somewhat sinuated before, and an oval, oblique yellow spot on the middle of each side; third and fourth segments with each an abbreviated, whitish, submarginal line behind; *venter* with a spot at tip of the first segment, and a submarginal band on the second behind.

Length from nine-twentieths to more than three-fifths of an inch.

Var. α. Spot on the second segment of the tergum elliptical.

Var. β. A pale yellowish spot on each side of the scutel, and nearly in a line with it.

This species is very closely allied to the *coarctata*, Fabr. of Europe, but the whole of the hypostoma is yellow, the line between the antennæ being only a process from it; there is no yellow point beneath the wings; none on the first segment of the tergum; and the bands on the third and fourth segments are always much abbreviated, never extending to the sides or upon the venter.

Like the *coarctata* this species constructs for each of its eggs a hollow globe of earth, with a short ascending neck, the rim of which is sometimes widely outspread horizontally; it is often built around a twig of a bush for support, as represented by Degeer, (Hist. abrégée des insectes, vol. 2, pl. 16, fig. e.) sometimes the nest occurs simply attached to the superior page of a leaf. The egg deposited in this globe in June, is inclosed with a sufficient supply of food,

consisting of the larvæ of some of the nocturnal Lepidoptera. Early in July or towards the middle of that month, the perfect insect makes its way through the side of its dwelling. The form of the first segment of the abdomen of our species, is similar to that of Schaeffer's representation of his Vespa *nona*, (Icon. vol. 1, pl. 53, fig. 10,) which is proportionally much smaller than in Degeer's figure of the *coarctata*. This species is found as well in Pennsylvania, as in the North-west Territory and Missouri.

2. E. *verticalis*. Black; hypostoma above, anterior thoracic margin, scutellar line, posterior submargins of the abdominal segments, and spot each side on the first and second segments, yellow; metathorax with a vertical spot each side at tip.

Inhabits Pennsylvania.

This species differs from the preceding in the following characters; anterior portion of the hypostoma with a deeply trilobated black spot; superior wing-scale rufous; a small yellowish spot beneath the superior wing and a yellowish line over the insertion of the inferior wing; a vertical, oblong, yellow spot each side near the inferior tip of the metathorax; a small spot each side on the first segment of the tergum, and the yellow margin is reflected backwards on the lateral edge for a short distance; the spot of the second segment is elongated, and the bands of the third and fourth segments pass round the venter. Size about equal to the preceding, and seems to be allied to the *pomiformis*, Fabr.

3. E. *anormis*, Black; first abdominal segment very short and dilated.

Inhabits St. Peter's river and Arkansa.

♂ *Antennæ* with the scapus yellow before; *hypostoma* attenuated, truncate at tip, with large, longitudinal punctures, and at base a transverse, yellow, arcuated line; a

small spot on the front, another in each emargination of the eyes, and a transverse one behind the eyes on each side, yellow; *thorax* densely punctured, a yellow spot on each side of the collar; wing-scale yellow, with a pale-brown spot; *wings* fuliginous; *scutel* with a transverse, yellow line; *metathorax*, on each lateral margin with an oblique, yellow line; *pleura*, a yellow spot under the superior wing; *feet* yellow; thighs except at the knees, and spot on the anterior tibiæ, black; *tergum*, segments yellow on their posterior margins, first and second segments with each a yellow, lateral spot, the former segment short, dilated, not pedunculiform; *venter* immaculate.

Length more than seven-twentieths of an inch.

Excepting in the character drawn from the first segment of the abdomen, this insect has a general similarity to the preceding species, and the form of the anterior portion of the hypostoma and the trophi, prove that this species is properly placed in this genus.

PTEROCHILUS, *Klug.*

P. 5-*fasciatus*. Segments of the tergum yellow on their posterior margins; first and second segments with a lateral, ferruginous spot on each.

Inhabits North-west Territory and Missouri.

♀ *Head* black; dilated posterior orbits, and anterior orbits to the emargination of the eyes, ferruginous; *hypostoma*, *scapus* of the antennæ and *mandibles*, ferruginous; tip of the former acutely emarginate in the middle; *flagellum* black-brown; *labial palpi* testaceous, very long, ciliate with long hairs, three-jointed; terminal joint much compressed, flat, obtuse at tip; *stethidium* black; *collar* and *wing-scale* ferruginous; *scutel* with two, large, yellow

spots; *metathorax* with a transverse, yellow line, and at the base each side a large ferruginous spot; *wings* a little fuliginous; *pleura* with a yellow spot beneath the superior wings; *feet* ferruginous; *tergum* black, with five, broad, bright yellow, somewhat dentated bands, the posterior one abbreviated; first and second segments with each a large ferruginous spot on each side; *venter* black, ferruginous at base.

Length more than seven-tenths of an inch.

ODYNERUS, *Latr.*

O. *annulatus.* Segments of the tergum yellow on their posterior margins; first and second segments with a lateral, ferruginous spot on each.

Inhabits North-west Territory and Missouri.

♂ *Head* black; *hypostoma* yellowish, truncate at tip, and with a small denticle each side; a large triangular spot on the *front*, front of the *scapus* of the antennæ, *mandibles*, and *anterior orbits* to the bottom of the emargination of the eye, yellowish; *posterior orbit* above with a ferruginous spot; *antennæ*, terminal joint very much compressed, ferruginous, and reflected outward and backward on the two preceding joints; *stethidium* black; *collar* and *wing-scale* ferruginous; *scutel* with two yellow spots; *metathorax* with a transverse, yellow line, and at the base each side a large ferruginous spot; *wings* a little fuliginous; *pleura* with a yellow or ferruginous spot beneath the superior wings; *feet* ferruginous; *tergum* black, with six, broad, bright yellow bands; first segment ferruginous excepting the posterior margin, with a black spot in the middle; second segment with a large ferruginous spot each side, in which is a smaller yellow spot; *venter* black, fer-

ruginous at base; posterior segments with yellow posterior margins.

Length more than half an inch.

♀ First and second joints of the antennæ ferruginous; *tergum* with five yellow bands; first and second segments ferruginous with yellow posterior margins, the latter segment with a large yellow spot each side, and more or less of black in the middle.

Size very little larger than the male.

The very striking similarity in markings between this species and the PTEROCHILUS 5-*fasciatus*, led me at first to consider it the male of that species, but having several specimens, on submitting them to a more accurate inspection, I discovered that one of the number is a female nearly corresponding in size with the others, and agreeing with them in the form of the termination of the hypostoma and in the ventral bands, which specifically distinguish this species from that just mentioned.

NOMIA, *Latr.*

N.? *heteropoda.* Hairy, blackish-fuscous; wings blackish at tip; posterior tibia much dilated, triangular; terminal joint of the antennæ compressed, dilated.

Inhabits North-west Territory, Arkansa, and Maryland.

♂ *Body* blackish-fuscous, with cinereous hair; *antennæ* hardly as long as the thorax, terminal joint compressed and dilated on the inner side, subsecuriform; *mandibles* unarmed; *wings* slightly tinged with dirty yellowish, with a broad, blackish, terminal border, nervures reddish-brown; *intermediate feet* with the thighs very much dilated, compressed, triangular, first joint of the tarsus dilated and compressed before; *posterior feet* with the thighs dilated,

particularly towards the tip; tibia remarkably dilated, forming a rectangular triangle, much compressed, excepting at the inner tip, and undulated on the inner side, first joint of the tarsus elongated, much longer than the tibia, not dilated, densely ciliated on the inner side with equal, fulvous hair; *venter* sparsely hairy; fourth segment divided by a longitudinal suture in the middle, at the posterior angles prominent, acute; fifth segment short, longitudinally carinated in the middle, and with a prominent tubercle each side behind; sixth segment longitudinally divided in the middle by a suture.

Length seven-tenths of an inch.

This singular insect does not perfectly correspond in character with the genus under which I have placed it, and it disagrees still more with the neighbouring genera as defined in the books.

PANURGUS, *Panz.*

P. 8-*maculatus*. Black; tergum with four, transverse, yellow spots on each side.

Inhabits United States.

♂ *Hypostoma*, *labrum*, *mandibles* at base, inferior part of the anterior orbits, yellow; *antennæ* brown, yellowish beneath and bright yellow on the anterior side of the basal joint; *thorax* slightly tinged with brassy, a small yellow point each side on the collar; *pleura* with a yellow spot before the wings; *wings* slightly dusky, pale at base, nervures fuscous; *feet* yellow, middle of the thighs and posterior middle of the tibiæ blackish; posterior feet blackish-brown, knees and base of the thighs yellow; *tergum* dark-brown, four first segments each with a transverse, yellow spot.

Length more than one-fifth of an inch.

♀ *Hypostoma* with three, longitudinal, yellow spots, of which the intermediate one is longest; *orbits* on the anterior inferior portion with a triangular yellow spot; *antennæ*, basal joint entirely black; spots of the *tergum* less elongated than those of the male, and the feet have more of the black colour.

Length rather over one-fourth of an inch.

MEGACHILE, *Latr.*

1. M. *interrupta.* Thorax surrounded by ferruginous; tergum five-banded.

Inhabits Missouri.

♂ *Body* punctured, above glabrous; *head* black; *antennæ*, first joint at base and third and fourth joints dull rufous; *hypostoma*, broad frontal *orbits*, and *mandibles* at base, yellow; *vertex* with a ferruginous band, interrupted in the middle and extending down the cheeks; *labrum* rufous, a small black spot at base; *thorax* black, surrounded by a ferruginous margin, which is interrupted before, and passes upon the posterior margin of the scutel; *wings* fuliginous; *pleura* with cinereous hair beneath the wings; *feet* rufous, tarsi with yellow hair; *tergum* convex, black, with dilated, obscure, rufous, scarcely definite bands, five in number, on each of which, excepting the basal one, is another yellow band emarginate each side behind, and the three posterior ones are interrupted in the middle; *anus* trilobated; lobes yellow, intermediate one small; *posterior coxæ* each with a robust yellow spine; *venter* with transverse bands of long, dense, yellow hair.

Length nearly two-fifths of an inch.

♀ The black colour of the front extends down upon the

middle of the hypostoma nearly to its tip; the rufous colour on the basal joints of the antennæ is obsolete; *labrum* black on the disk; *mandibles* black, excepting a small, rufous spot at base; the three last bands of the tergum are destitute of any rufous colour about them; *venter* densely covered with hair; *mandibles*, as in the male, three-toothed; posterior coxæ unarmed.

Length about the same as the male, but more robust.

2. M. *emarginata*. Black; a band on each abdominal segment, slightly interrupted in the middle, and emarginated each side before.

Inhabits Missouri.

♀ *Body* punctured, above glabrous; *head* with a small yellow dot each side of the vertex; *mandibles* five-toothed; *thorax* with a small, whitish spot before the wings; wing-scale whitish, with a brown spot; a whitish spot on the posterior angles, forming a curve with two whitish spots on the scutel; *wings* hyaline, nervures fuscous; *feet* black, a dilated whitish line on the exterior side of the tibia, tarsi with dull yellowish hair; *tergum* convex, a whitish band on each segment, very slightly interrupted in the middle, and, excepting the first one, deeply emarginated each side before, the terminal segment with two rounded spots instead of a band.

Length less than seven-twentieths of an inch.

3. M. *jugatoria*. Black; a band on each abdominal segment, interrupted in the middle and entire each side.

Inhabits Missouri.

♀ *Body* punctured, above nearly glabrous; *head* with a yellow line on the superior part of the cheeks; *hypostoma* with a dilated, yellow line, which extends upon the anterior orbits nearly to their summit; *thorax* with a widely interrrupted line before, extending round above the wings,

and two oblique lines upon the scutel, yellow; *wings* fuliginous; *feet* blackish, with dull rufous joints, and tarsal hair; anterior feet before dull rufous; *tergum*, bands yellow, not at all emarginated each side, the basal band widely interrupted, second band less widely interrupted, the penultimate one hardly interrupted, and the ultimate one entire.

Length about seven-twentieths of an inch.

That these three species are congeneric is evident, but they do not correspond in all respects with the genus MEGACHILE as defined by entomologists. The trophi agree very well, and the form of the nails of the feet in the two sexes are also similar, but the tergum is convex, as in OSMIA, and the abdomen curves very much downwards towards the tip, as in STELIS, from which latter genus they differ by having a hairy venter.

CAELIOXYS, *Latr.*

C. 8-*dentata*. Black; abdomen with five white bands, tip eight-toothed.

Inhabits United States.

♂ *Front* and *hypostoma* with dense, long, dull yellowish hair; *thorax* with a dentated band before, interrupted in the middle, a spot at the base of the wings and a transverse line at base of the scutel, white; *wings* a little dusky on the apicial margin; *feet* rufous; *tergum* with five white bands, of which the two or three terminal ones are double; segments each with a transverse indented line; tip with eight teeth, of which two are on each side, and four at the extremity placed two above and two beneath; *venter* with a white line on the posterior margin of each segment, the basal and terminal ones obsolete.

Length two-fifths of an inch.

Var. *α*. Spots and lines of the thorax obsolete; feet, excepting the tarsi, black.

This is an inhabitant of various parts of the United States, from the North-west Territory to Arkansa, and is common in Pennsylvania.

NOMADA, *Fabr.*

N. *bisignata.* Terminal half of the wings with a dusky margin; abdomen rufous, with a bright yellow spot each side of the middle.

Inhabits United States.

♀ *Head* ferruginous, front with a large, black spot, confluent with another transverse one on the vertex; occiput and throat black; *antennæ* blackish, beneath rufous; *stethidium* black, varied with ferruginous, and like the head rough with dense punctures; *thorax* ferruginous, with a longitudinal, black line; *scutel* ferruginous; *feet* rufous; thighs black at base; *wings* dusky, particularly on the margin of the terminal half; *tergum* rufous, the segments on their posterior margins, and the basal segment at base also black; second segment with a large, lateral, yellow spot, and a slight appearance of another on each side of the third segment.

Length rather more than three-tenths of an inch.

This species varies in having the thorax black, with four ferruginous lines.

EPEOLUS, *Latr.*

1. E. *lunatus.* Tergum with two opposite lunules on the first segment, and three bands on the other segments.

Inhabits Missouri and Prairie du Chien.

♀ *Body* black; *front* with a whitish spot surrounding the base of each antennæ; *antennæ* black-brown, three basal joints and *labrum* ferruginous; *thorax* with two abbreviated, whitish, longitudinal lines before the middle, a pale yellowish line on the collar, another over the wings, passing round behind above the scutel, a double line beneath the scutel, and an oblique sagittate spot each side on the metathorax, also pale yellowish; *wings* a little fuliginous; *feet* rufous; thighs blackish in the middle; *tergum* velvet-black; first segment with an angulated lunule on each side, and a subterminal band on each of the three following segments, of which the first is very slightly interrupted; terminal segment with a slight, oblique, cinereous spot each side.

♂ Anterior half of the thorax with much of the pale yellowish colour; bands of the tergum larger than those of the female and one more in number, feet nearly all blackish.

Length half an inch.

Smaller than E. 4-*fasciatus*, nobis, but much larger than E. *mercatus*, Fabr.

2. E. *scutellaris*. Thorax surrounded by ferruginous; posterior spines dilated.

Inhabits Middle States.

♀ *Body* deep black, densely punctured; *front* with a white spot surrounding the base of each antennæ; *antennæ* black-brown, three basal joints and *mandibles* rufous; *thorax* with the collar, obsolete line over the wings, dilated posterior teeth and *scutel*, ferruginous; *wings* dusky on the terminal margin; *feet* rufous; *tergum* black-brown; two distant bands on the first segment, of which the first is obsolete, and the other is interrupted in the middle, se-

cond and third segments each with a band on their posterior margins, pale yellow; remaining bands indistinct.

Length from three-tenths to nearly seven-twentieths of an inch.

Much smaller than the preceding, and about equal in size to E. *mercatus*, Fabr. from which it differs by various characters, and particularly by the much more dilated form of the posterior thoracic teeth. During rainy or windy weather, this insect secures itself to the edge of a leaf or to the small branch of a bush, by its mandibles, retracts the feet to the body, and projects the antennæ forwards.

ORDER DIPTERA.

ANOPHELES, *Meig. Wied.*

A. 4-*maculatus*. Pale brownish; wings with four fuscous spots.

Inhabits North-west Territory.

Thorax dull cinereous; two oblique, brown lines confluent behind and reaching the posterior edge; a broad, lateral, brown line also extending the whole length of the thorax; *wings* hyaline, the nervures hairy, forming two blackish spots near the middle, placed longitudinally; and two others nearer the tip on the bifurcations of the nervures, placed transversely; *scutel* dull ochreous, dusky in the middle; *feet* black-brown, incisures at tip of the thighs and of the tibiæ, yellowish; *tergum* whitish, a little varied with dusky.

Length ♀ to the tip of the wings more than three-tenths of an inch.

Closely allied to the *maculipennis*, Hgg. I have not seen the male. Wiedemann informs me that my CULEX *punctipennis* is a true ANOPHELES, an observation which I have found to be correct. I described that insect in the year 1819, before any account of that new genus had reached this country, otherwise I certainly should have adopted it.

LASIOPTERA, *Meigen.*

L. *ventralis. Body* blackish-brown; *antennæ* 18-jointed, hairy, joints subglobular, rather transverse, and placed close to each other, basal joint whitish; *thorax* and *tergum* immaculate; *feet* whitish, exterior side of the tibiæ blackish; *tarsi* blackish, first joint very short; *venter* whitish in the middle; *wings* with a narrow, blackish, costal margin, which is gradually narrowed to the tip.

♀ Length rather more than one-twentieth of an inch.

I caught this species in the garden of the University of Pennsylvania, early in August.

CECIDOMYIA, *Latr.*

C. *ornata.* Carneous; wings spotted.

Inhabits Pennsylvania.

Body varies in colour from a very pale flesh colour to a deep red; *antennæ* and *feet* whitish; *wings* with five or six dusky spots occasioned by the greater density of the hair of the surface in those parts.

Length to the tip of the wings nearly one-tenth of an inch.

This is most probably the prettiest species of the genus;

it occurred on a window in Philadelphia on the 13th of September.

PSYCHODA, *Latr.*

P. *alternata.* Wings acute at tip, with a small black spot at the tips of the nervures.

Inhabits Pennsylvania.

Body pale yellowish-white; *abdomen* dusky; *wings* ovate-lanceolate, acute at tip, cinereous with an obsolete pale band on the middle and base; the alternate nervures of the posterior margin at their tips and the tips of the nervures of the anterior margin, with a black spot; spots of the posterior margin more distinct.

Length to the tip of the wings more than one-tenth of an inch.

A very common little insect, even in Philadelphia. It may be readily distinguished from other species by its more acute wings, as well as by the arrangement of the spots and bands, however obsolete, which exist on these organs.

LIMNOBIA, *Meig.*

L. *argus.* Yellowish-white; head black; wings ocellate and marbled with blackish.

Inhabits North-west Territory.

Antennæ moniliform; *thorax* pale yellow-piceous, whitish near the neck; *wings* hyaline, with a double series of large, pupilate ocellæ, those near the tip confused; ultimate nervure furcate; *poisers* fuscous, at tip white; *coxæ* whitish; *thighs* annulate with black near the tip.

Length ♂ ♀ more than three-tenths of an inch.

To this species the name of *ocellata* would perhaps be more appropriate than it is to the Linnæan species of that name, inasmuch as in the latter the ocellæ are epupilate. It is a very pretty insect, and exhibits much singularity in the arrangement of the nervures of its wings, the penultimate and ultimate nervures being connected by a transverse nervure which arises from the tip of the latter. In other respects the distribution of the nervures are similar to that of the *bifasciata*, Fabr. Wied.

TIPULA, *Linn. Meig.*

T. *maculatipennis.* Cinereous; thighs black at tip; wings dusky with white spots.

Inhabits North-west Territory.

Antennæ yellowish, incisures of the joints dusky; *palpi* blackish; *thorax* with two, brown, dorsal lines, which are confluent on the anterior margin, attenuated behind, and abbreviated behind the middle; a lateral line slightly interrupted in its middle, and hardly reaching the anterior or posterior margins; *scutel* dull honey-yellow, with a black line; *wings* dusky, with a black carpal spot margined with white, three or four white spots along the central nervure, and about as many near the termination of the ultimate nervure; *poisers* white, dusky at tip; *abdomen* blackish; incisures edged with whitish; *thighs* with a very obvious blackish tip.

Length to tip of the wings ♀ seven-tenths of an inch.

PTYCHOPTERA, *Meig.*

P. 4-*fasciata.* Wings hyaline, with four brown bands

Inhabits Pennsylvania.

Head and *thorax* blackish-brown; *antennæ*, *palpi*, *mouth*, and *hypostoma*, except near the base of the antennæ, whitish; *wings* with four, brown, subequidistant bands, of which the third reaches the inner margin and the others are abbreviated; *pleura*, *pectus*, and *feet*, yellowish white; the incisures of the latter dusky.

Length to the tip of the wings nearly half an inch.

This species is infested by a parasite of the genus OCYPETE. It occurred in June.

TRICHOCERA, *Meig.*

T. *scutellata.* Dark fuscous; scutel whitish.

Inhabits North-west Territory.

Palpi, blackish; *thorax* slightly tinged with livid; anterior angles and neck segments dull yellowish-piceous; *scutel* dull whitish; *wings* immaculate, whitish at base; *poisers* white, with a fuscous capitulum; *coxæ*, and *thighs* at base, dull yellowish.

♂ ♀ Length of the body three-twentieths of an inch.

Taken in September at the Falls of Kakabikka, beyond Lake Superior. The posterior margin only of the scutel is dull yellowish-white in the male. This species seems to be closely allied to T. *parva*, Meig.

PLATYURA, *Meig.*

(Ceroplatus, Bosc. Fabr.)

P. *fascipennis.* Thorax yellowish; wings with a blackish subterminal band.

Inhabits North-west Territory.

Head yellowish; disk of the *vertex* black; *thorax* immaculate; *wings* hyaline, with a blackish band near the

tip, hardly reaching the inner edge, and margined with an obsoletely whiter colour than the other parts of the wing; *poisers*, colour of the thorax; *coxæ* and *thighs* whitish; *tergum* blackish-testaceous; *venter* blackish, segments dull yellowish on their posterior and lateral margins; *abdomen* slender at base, gradually dilating behind.

♀ Length rather more than one-fifth of an inch.

The wing nervures are arranged as in P. *baumhaueri*, Meig. It is probably closely allied to the *carbonaria* of Bosc, which, however, is described to be altogether of the same form as the *tipuloides*, Bosc, to have a black thorax and obscure feet; whereas ours is a much more slender insect than the *tipuloides* as represented by Coquebert.

SCIOPHILA, *Hgg.*

1. S. *pallipes*. Brownish-black, with gray short hairs; antennæ and feet whitish.

Inhabits North-west Territory.

Antennæ, (at least the two basal joints,) yellowish-white; *thorax* with numerous, scattered, short, gray hairs, which are fewer in number and more prominent behind; *wings* dusky; *poisers* elongated, yellow-white, at base dusky; *feet* yellow-white; *abdomen* with numerous, prostrate, short, gray hairs.

♂ Length to tip of the wings nearly one-fifth of an inch.

The nervures of the wings correspond with those of S. *hirta*, Hgg.

2. S. *littoralis*. Pale yellowish; thorax trilineate; abdomen fasciate with fuscous; feet dusky at tip.

Inhabits North-west Territory.

Vertex and a line extending down between the antennæ upon the hypostoma, blackish; *antennæ* dusky, two basal

joints yellowish; *thorax* with a double, brown, middle line, attenuated and abbreviated behind, and a brown approximate line on each side abbreviated before; a small fascicle of hairs beneath each wing, and a dusky spot over the insertion of each foot; *wings* immaculate; *poisers* yellowish-white; *abdomen* slender at base, gradually dilating towards the tip, dull-yellowish, hairy; incisures and tip dusky; *feet* dull-yellowish, towards their tips dusky.

Length of the body three twentieths of an inch.

I obtained this species on the rocky coast of Lake Superior, in a thicket of small bushes. The nervures of the wings correspond with those of Asindulum *punctatum*, Latr., excepting that the second nervure is not at all connected with the first nervure, but curves downward at tip and enters the intermediate cellule before the middle, and the ultimate and penultimate abbreviated nervures are distinct; it is a much smaller species than the *fasciata*, nob. the nervures of which agree better with the preceding species, but its connecting nervure from the second nervure enters the intermediate cellule at the middle.

3. S. *hirticollis*. Yellowish-white; thorax hairy; tergum black, with pale yellowish bands.

Inhabits North-west Territory.

Head black; *hypostoma*, *mouth* and *trophi* whitish; *antennæ* black-brown, the four basal joints yellow, with a dark brown spot above on the third and fourth; *thorax* with rather numerous, somewhat long, black hairs; three dilated, brownish-livid lines, the intermediate one abbreviated and attenuated behind, and the lateral ones attenuated before; *wings* a little dusky, the intermediate cellule appearing to the eye like a small, black spot; *poisers* whitish; *pleura* with a brownish-livid spot over the intermediate and posterior feet; *feet* dusky towards the tip, the coxæ

with strong, black hairs on the exterior side and tip; *tergum* black, with black, rather long hairs; segments with broad, yellowish hind margins; tip black.

Length of the body three-twentieths of an inch.

The wing nervures resemble those of S. *littoralis*, nob., but the abbreviated nervures are very strongly marked; the second nervure is connected with the first, and by a transverse nervure with the intermediate cellule opposite to the middle; the cellule is also connected with the central, furcate nervure, by a nervure as perfectly transverse as that of S. *vitripennis*, Meig.

4. S. *bifasciata*. Dark yellowish; wings bifasciate.

Inhabits North-west Territory.

Head black; *antennæ* fuscous; *hypostoma* yellow, near the antennæ blackish; *palpi* whitish at base, dusky towards the tip; *thorax* honey-yellow; two oblique, black lines confluent behind, and not reaching the posterior margin; a black line above each wing, joining on the posterior margin and meeting the oblique lines at the anterior angles; *wings* hyaline, with two blackish bands more obvious at the costal margin, one of which is near the middle widely interrupted on the disk, and the other near the tip; *metathorax* black; *feet* white-yellow at base, dusky towards the tip.

Length to tip of the wings nearly two-fifths of an inch.

A large and handsome species. The wing nervures agree with those of ASINDULUM *punctatum*, Latr. excepting that the second nervure is continued a short distance beyond its transverse nervure, which latter enters the intermediate cellule at the basal angle.

5. S. *obliqua*. Pale yellowish; thorax four-lined; *tergum* fasciate with black.

Inhabits North-west Territory.

Head black; *hypostoma* and base of the antennæ yellow; *thorax* with two oblique, fuscous lines confluent at the middle of the base; and a dilated fuscous line each side much abbreviated before and hardly reaching the basal edge; *wings* slightly tinged with dusky, immaculate; *poisers* white; *feet* white, dusky towards the tip; *tergum*, segments with blackish posterior margins; last segments entirely blackish; anal segment yellow.

Length ♂ nearly one-fifth of an inch.

The wing nervures are arranged altogether like those of ASINDULUM *punctatum*, Latr. Closely allied to S. *fasciata*, nobis, but may be distinguished by the narrow, oblique lines of the thoracic disk.

LEIA, *Meig.*

L. *ventralis.* Deep black, polished; wings fasciate near the tip; feet yellowish.

Inhabits North-west Territory.

Head a little hairy; *palpi* and three basal joints of the *antennæ*, yellowish; remaining joints of the latter fuscous; *thorax* with sparse hairs; a whitish humeral spot; *wings* hyaline, with a dusky band near the tip, which does not reach the thinner margin, and a dusky tinge or line between the ultimate and penultimate nervures; *poisers* with a fuscous capitulum and yellowish stipes; *feet* yellowish-white; *tarsi* dusky; *tergum* hairy; *venter* pale yellowish.

♂ Length of the body nearly three-twentieths of an inch, to tip of the wings more than one-fifth of an inch.

This species is closely allied to the *bimaculata*, Meig. with which it also corresponds in the position of the stemmata and the arrangement of the wing nervures, even to the dislocation of the superior branch of the inferior furcate nervure.

MYCETOPHILA, *Meig.*

1. M. *sericea.* Head and thorax sericeous; the latter dusky, margined with yellowish.

Inhabits North-west Territory.

Head blackish, with a yellowish, sericeous gloss; *antennæ* fuscous, two basal joints and *palpi* yellowish; *thorax* sericeous, blackish on the disk, dull yellowish each side and on the anterior edge; *wings* immaculate, nervures fuscous; *poisers* and *feet* yellowish-white; *tarsi* and *spines* fuscous, the latter half the length of the first tarsal joint; *coxæ* yellowish-white, with a few short, black, rigid hairs on the exterior sides and tip, particularly the anterior pair; *abdomen* compressed, dusky above; sides dull yellowish on the tips of the segments.

♂ ♀ Length to tip of the abdomen one-fifth of an inch.

The wing nervures are arranged as in M. *fasciata*, Meig. excepting that there are three abbreviated nervures, as in M. *lateralis* of the same author.

2. M. *maculipennis.* Yellowish; thorax trilineate; wings three-spotted.

Inhabits North-west Territory.

Body pale yellowish; *vertex* dusky; *thorax* with a double fuscous line attenuated and abbreviated behind, but near, the middle; and a larger line on each side abbreviated before, confluent behind, extending upon the scutel; a spot of the same colour above the insertion of the wings; *pleura* with about two dusky spots, one over the insertion of each of the posterior feet; *wings* with three blackish spots on the costal margin, of which one is on the middle; the second much beyond the middle, obsoletely extended into an undulated band; the third is near the tip; *feet*

dusky at tip and on the posterior thighs near the knees, *tergum* with blackish bands.

Length of the body nearly one-fifth of an inch.

A very pretty species; the wing nervures are like those of M. *fasciata*, Meig. The antennæ in my specimen are deficient. Found on the coast of Lake Superior in a thick growth of bushes.

SCIARA, *Meig.*

(*Molobrus*, Latr.)

1. S. *atrata*. Entirely deep black, polished, immaculate; *wings* dusky, iridescent; *nervures* dark fuscous; *poisers* black; *thorax* in a particular light somewhat pruinose; abdomen opaque, with short black hairs; spines of the tibia rather longer than the transverse diameter of the tibia.

Inhabits North-west Territory.

♂ Length to tip of wings less than one-fifth of an inch.

The nervures of the wings agree with those of S. *thomæ*, Fabr. This seems to be very closely allied to S. *nigra*, Wied. an inhabitant of South Carolina, but the thorax in a particular light exhibits a grayish reflection, a character which Wiedemann attributes to the antennæ only in his species. The antennæ are deficient in my specimen.

2. S. *polita*. Deep black, polished; poisers whitish; feet yellowish at base.

Inhabits North-west Territory.

Body with numerous short hairs, which are slightly sericeous; *eyes* without interval above the antennæ; *wings* dusky, pale yellowish at base; *poisers* whitish; *feet* dusky towards the tip; *coxæ* and *thighs* yellowish-white.

♀ Length of the body less than three-twentieths of an inch.

The abdomen and thorax are both highly polished.

3. S. *fraterna.* Deep black, polished; abdomen black-brown, opaque; base of the poisers, and feet pale yellowish.

Inhabits North-west Territory.

Antennæ dark fuscous, with dense grayish hair; *eyes* in contact above the antennæ; *thorax* polished; *wings* dusky, pale yellowish at base; *poisers* with a yellowish scapus and fuscous capitulum; *feet* dusky towards the tip; *abdomen* fuscous, opake.

♀ Length of the body one-tenth of an inch, ♂ smaller.

4. S. *exigua.* Black; thorax piceous at the anterior angles; poisers whitish at base; feet whitish, dusky at tip.

Inhabits North-west Territory.

Antennæ fuscous, with dark gray hairs; *wings* a little dusky; nervures fuscous; *poisers* elongated, whitish, capitulum fuscous; *abdomen* fuscous, opaque.

♂ Length of the body one-twentieth of an inch.

♀ A little larger, with the base of the feet and of the poisers of a darker shade than those of the male.

SCATOPSE.

S. *atrata.* Deep velvet black; tarsi pale; tip of the antennæ abruptly compressed.

Inhabits Pennsylvania.

Body hardly polished and nearly opaque, immaculate; *poisers* colour of the body; *wings* hyaline; *marginal nervures* but little more than half the length of the wing, fuscous; furcate nervure attaining the tip; below the furcate nervure are two parallel nervures which do not reach the margin; beneath the latter is the ordinary undulated nervure.

I obtained several specimens which were crawling on the glass of a window, in September, in Philadelphia. The

nervures of the wings differ somewhat from those of the S. *notata*, Linn. Meig.; the marginal nervures do not approach so near the tip of the wing, and instead of a single nervure between the forked nervure and the undulated nervure, as in the *notata*, this species has two.

BIBIO, *Latr. Meig.*

B. *thoracica.* Black; thighs rufous.

Inhabits East Florida.

Body black, somewhat polished; *thorax* bright yellowish-rufous, with a small black spot on each side of the scutel; *collar*, *scutel*, and *metathorax* black; spines of the anterior tibiæ piceous, the exterior one much larger; *wings* fuscous; the fourth marginal nervure abbreviated, and not attaining to the inner margin.

Length ♀ two-fifths of an inch.

This is a very large and fine species. On the thorax is sometimes an obsolete brown line.

BERIS, *Latr.*

B. *viridis.* Bright green; tergum black-brown; venter pale; feet yellowish.

Inhabits Pennsylvania.

Head brassy-green, polished; *antennæ* obscure, yellowish, brownish at tip; *proboscis* and *palpi* whitish; *stethidium* green, polished; *scutel* with four yellowish spines; *wings* hyaline; stigmata large, fuscous; nervures fuscous, those of the costal margin anterior to the stigmata whitish; central areola destitute of an abbreviated nervure, two nervures passing off from the tip, and a third from very near its base; *poisers* white; *feet* pale yellowish, tarsi dusky at

tip, posterior tibiæ fuscous at tip; *tergum* black-brown, incisures and lateral edge yellowish; *venter* pale yellowish, dusky at base.

Length to the tip of the wings one-fourth of an inch.

This species seems to be allied to the *tibialis* of Europe, but the posterior tibia are not very obviously clavated, the central cellule of the wings is destitute of the small abbreviated nervure, and the inferior of the three nervures which radiate from this cellule issues out very nearly from its base, and not from the inferior middle as in that species.

ODONTOMYIA, *Meig. Latr.*

O. *vertebrata.* Black; abdomen white, with dorsal black spots.

Inhabits North-west Territory.

Mouth deep black, pale within; *hypostoma* with an elevated testaceous knob; *antennæ* deep black, terminal joint beneath dusky testaceous; *thorax* blackish, with hardly perceptible hairs; *scutel* dull testaceous, black at base; tip a little hairy; spines horizontal, white; *wings* white; *poisers* white, with a whitish-glaucous capitulum; *feet* yellowish-white; *abdomen* subquadrate, much depressed, white; *tergum* with a series of large black spots almost connected together.

Length ♂ rather more than three-tenths of an inch.

COENOMYIA, *Latr. Meig.*

C. *pallida.* Wings and abdomen yellowish-testaceous; thorax ferruginous.

Inhabits near St. Peter's river.

Head yellowish-testaceous; *orbits* beneath and behind dark cinereous; *vertex* with an elevated, obtuse, dusky line between the stemmata; *thorax* ferruginous; anterior angles a little prominent, rounded and concave behind with an elevated line reaching to the origin of the wings; *scutel* colour of the thorax; *wings* pale yellowish-brown, with margined nervures; *poisers* whitish; *feet* somewhat paler than the thorax; *tergum* polished; posterior segments somewhat sericeous; second, third, and fourth segments with three abbreviated series of punctures near their bases.

♀ Length four-fifths of an inch.

Of this interesting insect I obtained three specimens, which were females.

THEREVA, *Latr.*

T. *frontalis.* Black; thorax with two yellow vittæ; tergum annulate with yellow.

Inhabits North-west Territory.

Head beneath with white hair; *antennæ*, *proboscis*, and *palpi* black; *front* and *vertex* dusky yellowish, with a large, deep black, glabrous, polished, transverse, undulated spot; *thorax* black with two yellow lines, or yellow with three black lines; *wings* hyaline, tinged with dull yellowish; nervures fuscous, slightly margined, and with a carpal spot; *scutel* yellowish, with a dusky basal spot; *tergum* glabrous, polished, the posterior margins of the segments bright yellow, wider upon the sides; *pleura* and *pectus* glaucous, the latter hairy; *poisers* whitish, with a blackish capitulum; *feet* black; *tibia* excepting at tip dull testaceous; *venter* cinereous, changeable, second and third segments with yellowish posterior margins.

Length more than half an inch.

ANTHRAX, *Latr.*

1. A. *alcyon.* Wings brown, a hyaline spot near the middle, another at tip in which are two curved brown lines.

Inhabits North-west Territory.

Body black, with pale fulvous hair; *head* yellowish-white, hairs above the antennæ black; tip of the hypostoma prominent, and with black rigid hairs; *antennæ* black, basal joint yellowish with black hairs; *vertex* black; *occiput* with a very profoundly impressed line above; *scutel* piceous; *wings* dusky, pale brown on the disk, an obsolete, small, subhyaline spot between the middle and the base; a large, subtriangular, hyaline spot near the middle, a small portion of which is cut off by a nervure; tip with a large, subquadrate-oval, hyaline spot, the two arcuated nervures that pass across this spot are margined with blackish; central cellule widely bilobated at tip, lobes equally approaching the inner margin, a nervure passes from between the lobes to the edge of the wing, an abbreviated nervure passes from the lobe nearest the base, half way to the inner margin, and another nervure connects this lobe with the third nervure so as to form an additional cellule; *feet* yellowish; *tarsi* black; *venter* pale, two last segments black on the disk; *tergum* with blackish hair on the incisures.

Length nearly eleven-twentieths of an inch.

This species seems to approach nearest to Wiedemann's fifth tribe, though the additional cellule will justify its being placed apart; we observed it frequently on St. Peter's river and on Red river.

2. A. *tegminipennis.* Black with pale fulvous hair; wings brownish-black, immaculate.

Inhabits North-west Territory.

Head yellowish-white below the antennæ; *hypostoma* prominent, with a few rigid black hairs at tip; *antennæ* black, basal joint whitish, with black hair; *front* dull fulvous; *vertex* black; *wings* entirely brownish-black, without spot; *feet* pale rufous; *tarsi* black; *tergum* with black hairs at the incisures, which on the side alternate with the fulvous ones, but more distinctly so near the tip.

Length from nine-twentieths to half an inch.

This species belongs to Wiedemann's fifth tribe.

3. A. *fulvianus.* Black, covered equally with pale yellowish hair; wings hyaline, with a narrow, brown, costal margin.

Inhabits North-west Territory.

Head with dull yellowish, short hairs, intermixed with black ones on the front and hypostoma; *thorax* densely hairy; *wings* hyaline, interval between the two nervures of the costal margin, and base to the first transverse nervure, light brown; *feet* black, sericeous, with yellowish-fulvous hair, intermixed with black hairs; *tergum* covered with dense hair, without any intermixture of black hairs, and without any fasciated appearance; *venter* each side behind with hairs of a brighter fulvous tint than the others.

Length more than nine-twentieths of an inch.

Allied to A. *hottentota*, Fabr.

Belongs to the fifth tribe in Wiedemann's arrangement. It is common on St. Peter's river, at Pembina, &c. It is closely allied to *alternata*, nob. in the characters of the wing, but there is no sign of fascia on the tergum, nor of alternating black fascicles of hair on the sides. The colour of the hair on the last segments of the venter is sometimes ferruginous, but it is always of a deeper tint than that of

other parts of the body. It seems to vary in size, I have a specimen less than one-fourth smaller.

4. A. *fascipennis.* Black, slightly hairy; wings varied with blackish and hyaline.

Inhabits Red river of Winnepeek.

Body deep black, hairs sparse, very short, ferruginous; *head* with black short hairs above, and between, the antennæ; sides of the mouth whitish; hypostoma with dull, yellowish-ferruginous hairs; posterior orbits with silvery hair; *thorax* with long hairs before the wings; *scutel* margined with piceous; *wings* with a wide, blackish-brown costal margin from which proceed two oblique bands; the basal one is dilated and attains the thinner margin, on which it extends from the middle of the basal curve of the wing to the extremity of the first and second nervures; the second band is irregularly arcuated and is abbreviated near the thinner margin where it terminates in the form of a hook; on the costal margin near the tip is an oblique spot connected with the costal coloured margin; *poisers* fuscous; *capitulum* white at tip; *tergum* with the second and third segments obsoletely piceous each side; *venter* whitish at base; *feet* dusky; *tibia* pale.

Length one-fourth of an inch.

This species coincides with the third tribe in Wiedemann's arrangement of this genus. It is small, and the wings are prettily variegated. The specimen I obtained is remarkably destitute of hair.

5. A. *costata.* Black; wings hyaline, with a black costal margin, and small anastomosis in the middle.

Inhabits North-west Territory.

Body deep black, with very short, sparse, sericeous hairs; *thorax* with the lateral hairs longer and pale yellowish-rufous; *wings* hyaline, with a blackish costal margin bound-

ed by the fourth nervure as far as the middle, where it is abruptly contracted so as to be included by the first apical nervure for a short distance, when it is gradually contracted so as to be included by the two costal nervures; anastomosis near the centre of the wing, blackish; *feet* black; *poisers* fuscous, capitulum whitish.

Length more than three-tenths of an inch.

The disposition of the wing nervures of this species corresponds with that of the fifth tribe in Wiedemann's arrangement.

LAPHRIA.

1. L. *posticata.* Black; thorax and before the tip of the tergum covered with yellow hair.

Inhabits North-west Territory.

Antennæ, hair of the *vertex* and of each side of the antennæ, black; long hair beneath the antennæ yellowish; hair of the *cheeks* long, white; *thorax* covered with yellow hair, immaculate; *pleura* and *pectus* black, the latter with long whitish hair between the feet; *poisers* yellowish-white; *wings* dusky; *tergum* blued-black, polished, with black hairs each side; two last segments and posterior margin of the preceding segment covered with yellow hair; *venter* polished, immaculate.

Length three-fifths of an inch.

2. L. *flavicollis.* Black; wings dusky; hair of the head and thorax yellow.

Inhabits North-west Territory.

Head with long yellow hairs, and a few black ones over the mouth; *proboscis*, *antennæ*, and *palpi* black, the latter with black hairs; *thorax* thickly clothed with yellow hair, immaculate; *wings* dusky; *nervures* fuscous; *poisers*

dark reddish-brown; *feet* with black hair; a few pale hairs on the basal half of the thighs, and many about the origin of the feet; *tergum* black, with a slight shade of blue, polished, and with black hairs.

Length more than half an inch.

This species resembles the *thoracica*, Fabr., but may be distinguished by the colour of the hair of the head, it is also a smaller insect, with a more slender form.

ASILUS.

A. *abdominalis*. Black; hypostoma silvery; tergum fulvous in the middle.

Inhabits North-west Territory.

Head rather small; *antennæ* elongated, second joint very small; *hypostoma* bright silvery; *mystax* sparse, rigid, black; *thoraæ* with minute black hairs, and a few longer ones on the margin; *wings* broad, black; *tergum*, segments, excepting the basal one and two terminal ones, reddish fulvous.

Length more than three-fifths of an inch.

The styles of the antennæ being lost in the specimen, I am not certain that this species is correctly arranged when placed in this genus. It will not agree with Dioctria, as the antennæ are perfectly sessile, nor with Dasypogon, as the basal joint of the antennæ is nearly four times the length of the second joint. The rectilinear posterior tibiæ will not authorize its reference to Laphria. The appearance of the pectus and the adaptation of the feet are precisely as in Asilus. In the arrangement of the wing nervures it agrees with Wiedemann's first tribe.

HEMERODROMIA, *Hgg.*

H. *superstitiosa.* Whitish; thorax with a broad, blackish-brown vitta; tergum with a broad black vitta, which is crenate on its edges.

Inhabits North-west Territory.

Antennæ, proboscis, and *front* white; *occiput* and *inferior part of the head* blackish-brown, in some parts slightly sericeous; *eyes* chesnut-brown; *thorax* with a broad vitta, which is paler in the middle and occupies the greater portion of its surface; *wings* hyaline; *poisers* white; *scutel* dusky, with a paler margin; *tergum,* the broad vitta is very deeply crenated on its edges, and is often separated into a series of large spots by the incisures; *beneath* white.

Length nearly three-twentieths of an inch.

This species is very closely allied to the H. *oratoria,* Fall. The disposition of the nervures is the same with those of that species, but the *oratoria* is said to have only a line on the thorax in place of a vitta, to have the abdomen all dark brown, and the tip of the posterior tibia brown.

SARGUS, *Latr. Meig.*

1. S. *decorus.* Front blue; thorax green; tergum greenish golden; feet pale yellow.

Inhabits Pennsylvania and East Florida.

Hypostoma and *vertex* blackish; *proboscis* yellow; *antennæ* dusky yellowish, third joint darker; *frontal tubercles* with a white reflexion; *wing* dusky, stigma distinct; *poisers* pale yellow; *pleura* blackish-piceous; *feet* yellow; posterior tarsi dusky; *abdomen* slender, widest at tip, gra-

dually attenuated to the base, and with pale yellowish-brown hair.

Length about three-tenths of an inch.

This species is very closely allied to the S. *auratus*, Meig. Fabr. but it is smaller and the feet are dissimilar; it may, however, prove to be a variety of that species.

2. S. *dorsalis* Black, eyes brassy, with a green line; feet white, tibiæ and tarsi above blackish.

Inhabits Kentucky.

Stemmata approximate on the vertex; *eyes* brown, when recent brassy-green tinged with red or purplish, a broad, green, longitudinal line across the middle; *antennæ* whitish at base; *feet* white; *tarsi* black at the tip; *anterior* and *posterior tibiæ* black above; *wings* dusky, *nervures* deep brown, *carpus* distinctly marked by an oblong, opake, brown spot; *abdomen* oval, middle of the two or three basal segments of the tergum and venter whitish.

Length of ♀ one-fifth of an inch, ♂ rather less.

The male is very similar to the female, but is a little smaller. This species is allied to the genus VAPPO, *Latr.* by the nervures of the wings, the nervure between the three which radiate from the central joint being altogether wanting, but the second joint of the antennæ resembles that of a SARGUS, the third joint is deficient in my specimens. In general form it resembles S. *politus*, Linn.

PARAGUS, *Latr.*

P. 4-*fasciatus*. Black; tergum with four yellow bands; costal margin of the wings fuscous.

Inhabits North-west Territory.

Head pale yellowish; *hypostoma* slightly impressed with a black line, and another dilated black line descends

from the black vertex and includes the superior portion of the tubercle of the antennæ; *mouth* each side black; *antennæ* blackish-piceous, basal joint and seta paler; second joint decidedly longer than the first; *eyes* with two yellow bands of which the anterior one is irregular; *occiput* black, with a cinereous orbital line; *thoraæ* with four yellow spots on the anterior margin; an obsolete, yellowish, curved line above the wings terminating anteriorly in a transverse, whitish spot on each side of the centre; an angulated yellow line behind; *pleuræ* with two yellow spots placed vertically; *scutel* edged with yellow; *wings* hyaline; a fuscous, costal margin, ferruginous at base and gradually dilated towards the tip; *poisers* white; *feet* white; anterior pair with the anterior half of the thighs and tibiæ and all their tarsi black; intermediate pair with the tip of the thighs, of the tibiæ, and all the tarsi pale rufous; posterior pair hairy beneath, with a tooth near the tip and posterior half black; tarsi and tip of the tibiæ pale rufous, the latter arcuated; *tergum* with a band near the base, somewhat narrowest in its middle; another narrower one on the middle and two near the tip a little broader in their middles, yellow; *venter* with about three distant, narrow, yellow bands, of which the middle one is sometimes fulvous.

Length less than three-fifths of an inch.

This insect does not altogether agree with the characters of the genus in which I have placed it, inasmuch as the hind thighs are toothed, the hind tibiæ arcuated, and the terminal joint of the antennæ is oval and not elongated. It disagrees with MILESIA in the elongated first and second joints of the antennæ, and with PIPIZA in the length of the palpi, and but for the character of the antennæ, I should certainly refer it to the genus MILESIA.

§ 2. BOTANY

A CATALOGUE

Of plants collected in the North Western territory by Mr. Thomas Say, *in the year,* 1823. By Lewis D. de Schweinitz.

Mr. Thomas Nuttall, who had taken upon himself the charge of examining this collection, and had begun to commit his remarks to paper, not having returned from Europe in time to complete his work, the plants collected by Mr. Say were entrusted to me, with a request to attempt their determination, and a description of such as appeared to be nondescripts. I have undertaken this task with great diffidence and sincere regret that it could not be executed by a gentleman, every way so exclusively competent as Mr. Nuttall is, both from his well known botanical talents in general, and his particular acquaintance with the western plants, my own knowledge of which is almost confined to what I owe to that gentleman's liberal and kind communications.

As it, however, appeared desirable, that a catalogue should be made out for the Appendix of the account of Major Long's second expedition, I have exerted myself to the best of my abilities to furnish it, in continuation of the work commenced by Mr. Nuttall, which, however, unfortunately comprised only the five first plants of the present catalogue.

As I am conscious of my incompetency to establish new species from specimens, which, though generally well preserved, are mostly imperfect, rarely furnishing both flower and fruit together, unassisted by that acquaintance from nature which Mr. Nuttall possesses, I have to remark that the names I have ventured to designate such by, as I could not find described in the books, should be considered, together with the descriptions I have subjoined, nothing more than an attempt to point out what has been met with by the gentlemen of the present expedition, leaving the confirmation of the new species proposed to future investigation and abler hands.

I. CLASS MONANDRIA.

1. Salicornia *herbacea*, Willd. Sp. Pl.

Collected in the vicinity of a salt spring on the banks of Red river of Lake Winnepeek, about the latitude of 49 degrees. The only inland locality of this saline plant besides the present, is the salt springs of Onondago, in the state of New York. (Mr. Nuttall.)

II. CLASS DIANDRIA.

2. Veronica *peregrina*, Fl. Dan. Tab. 407.

Common throughout the United States as far south as the mouth of the Mississippi. (Nuttall.)

III. CLASS TRIANDRIA.

3. Calymenia *nyctaginea*, Nutt. Gen. I. p. 26.

Allionia nyctaginea, Mx. Fl. Am. p. 100. (Nuttall.)

4. CYPERUS **alterniflorus*, L. v. Schw.

This very remarkable plant was labelled *Cyperus* by Mr. Nuttall, and I have attemped the following description:

Root tuberous. *Stem* about a foot in height, triquetrous, scabrous in margin, strongly striate, bifoliate at base, sheathed by a few marcescent sheaths. *Leaves* much shorter than the culm, narrow, (two lines wide, inclined to fold,) striate, scabrous in the margin, midrib smooth. *Involucrum* leaves equal in number to the rays of the umbell, those of the longer spikes or partial umbells, exceeding these in length and broadened at base; very scabrous in the margin. *Rays* of the umbell 5–6; the outer ones on long peduncles, central ones nearly sessile; each ray surmounted by 7 or 8 alternate, subdistichous spikelets, containing 5 or 6 florets.

Florets regularly alternate, subdistant, the one in summit sterile. *Glumes* striate, broadly ovate, with an abrupt mucro, arising from the protruded, green, scabrous carina, having an indenture on each side thereof. *Seed* markedly triquetrous, compressed, shorter than the glumes. *Filaments* 3. *Style* three-cleft; margin of the glumes membranaceously scariose; short, acuminate, rigid bracteas at the base of each spikelet.

It might be characterized thus:

C. spicis corymboso-umbellatis, compressis centralibus, subsessilibus: spiculis distichis, floribus, alternatim, distantibus. Glumis lato-ovatis, carina mucronatis.

"5. ERIOPHORUM *angustifolium*, β. **megastachyon*, culmis subtrigonis brevibus, involucro umbella longiore; spicis pedunculatis maximis.

Hab. Prairies between Fort Wayne and Lake Michigan.

" *Obs.* A singular dwarf but robust species; in the only specimen I have seen, (said by Mr. Say to present its general aspect,) the culm is scarcely more than 12 inches high, triangular above, and unusually thick for the height of the plant; the leaves I have not seen. The involucrum consists of three very unequal, rigid leaves, (when dry,) striate and carinated, with blunt, attenuated points, the longest exceeding the length of the umbell. The size of the umbell, and the spikes which compose it, are remarkably large; the number 7, upon elongated and nodding peduncles of unequal length. Each spike measures about an inch in length, and about the same in breadth. The scales of the spike are ovate and acute, the seed elliptic-oblong, and somewhat flatly quadrangular. It is in all probability a distinct species." (Mr. Nuttall.)

6. Limnetis *glabra*, Pursh.

Not rare.

Hab. Prairies of the St. Peter.

7. Agrostis *brevifolia*, Nuttall Gen. I. p. 44.

8. Panicum *elongatum*, Pursh, I. p.

This is the plant I have always designated by the above name, finding it frequently in North Carolina.

Hab. Prairies of the St. Peter.

9. Festuca *spicata?* Nutt. Gen. I. p. 72.

I am not sure whether this is Mr. Nuttall's plant, but it evidently comes near it. The specimens in the collection indicate a larger size than he ascribes to it.

Hab. Prairies of the St. Peter.

10. Bromus *ciliatus*, Linn. Willd. Spec. Pl. I. p. 433. See Elliott, Sketch, I. p. 173.

This I think is the true *ciliatus* of Linnæus, for, in the present species, the margins only, and not the back, are very hairy.

Hab. Prairies of Red river.

11. Atheropogon *oligostachyum*, Nutt. Gen. I. p. 78.

Found on the Missouri and northern lakes.

Hab. Prairies of the St. Peter.

12. Hordeum *jubatum*, Nutt. Gen. I. p. 88.

Hab. New England. Lakes.

13. Triticum **pauciflorum*, L. v. Schw.

This grass greatly resembles a *Lotium*, but must be arranged in the Genus *Triticum*, on account of its two-valved calyx. It is allied to *junceum*.

Culm about two feet high, distantly and alternately foliose, terete, deeply striate, smooth, simple. *Leaves* clasping the culm with sheaths of their own length, viz. two or three inches, linear, striate and very scabrous on the ribs and margin, somewhat glaucous. *Spike* simple, erect; *spikelets* mostly only two-flowered, closely adpressed in a two-valved calyx. *Valves* equal, acute, strongly striate and scabrous on the ribs. *Glumes* on a short, thick, hairy pedicell, with a short arista.

Hab. Prairies of the St. Peter.

14. Lechea *tenuifolia*, Pursh, I. p. 91.

IV. CLASS TETRANDRIA.

15. Cornus *canadensis*, Pursh, I. p. 108.

This occurs on all the high mountains of the United States.

16. Cornus *alba*, Pursh, I. p. 109.

C. *stolonifera*, Mx.

Not rare in the northern states.

17. Potamogeton *pauciflorum*, Pursh, p. 121.

This may be the P. *gramineum* of Mx. but it certainly is not that of Europe, which, however, is common in mountain brooks in the United States.

V. CLASS PENTANDRIA.

18. Myosotis *virginiana*, Pursh, p. 134

Common in the United States.

19. Lysimachia *ciliata*, Pursh, p. 136.

Common in the United States. The specimens are unusually small, but not even a variety.

20. Convolvulus *repens*, Elliott, Sketch, p.

C. *sepium*, American. auctor.

It appears to me that the American *Convolvulus sepium* has been judiciously separated from the European species.

21. Campanula *rotundifolia*, Pursh, p. 159.

As usual destitute of round leaves.

22. Symphoria *glomerata*, Pursh, p. 162.

Called vulgarly in North Carolina "Devil's shoestrings."

Hab. Rainy Lake, Lake of the Woods, &c.

23. Symphoria *racemosa*, Pursh, p. 162.

Snowberry. Common to the Lake country.

24. Ribes *albinervium*, Pursh, p. 163.

On northern mountains.

Hab. Islands in Lake of the Woods.

25. Impatiens *fulva*, Nuttall Gen. I. p. 146.

Common through the United States.

26. Apocynum *androsaemifolium*, Pursh, I. p. 179.

β. *pubescens.*

This is so constant a variety, (common in Pennsylvania,) that it might be specifically separated. The leaves are pubescent below and acuminate ovate.

27. Gentiana *crinita*, Pursh, I. p. 185.

Common in the northern states.

28. Gentiana **rubricaulis*, L. v. Schw.

Though there were but two specimens of this Gentiana, (one of which I was under the necessity of sacrificing to the examination,) it presents so distinct an appearance that

I have little doubt it will prove a new species, intermediate between G. *pneumonanthe* and G. *ochroleuca*. I describe it thus:

Stem erect, simple, terete, very smooth and firm, of a red colour; about one foot in height. *Leaves* about one inch in length, alternately opposite at intervals, oblong-lanceolate, of thick consistency, smooth, entire in margin and slightly undulate, obtuse, sessile and sub-amplexicaule or connate at base, with three nerves, the two lateral ones inconspicuous. The upper leaves forming a pseudo-involucrum of ovate leaves, not exceeding the corollas in length. Involucrum and leaves sub-erect. *Corollas* campanulate, erect, sessile, terminal, fasciculate or single, sub-quinquefid. Segments sub-connivent, the interior plait with a single tooth. *Calyx* very small in proportion to the flower, 5-fid.

Appears to have been bluish.

G. caule tereti glabro rubro: foliis oblongo-lanceolatis, trinerviis, obtusis. Corollis terminalibus fasciculatis sessilibus, 5-fidis campanulatis non ventricosis, laciniis acutis conniventibus; plicis interioribus unidentatis.

Hab. Prairies of St. Peter's river.

29. Thaspium *aureum*, Nuttall Gen. p. 196.

Smyrnium aureum, Pursh.

A dwarf specimen out of flower. Common.

30. Viburnum *pubescens*, Pursh, p. 202.

I have met with this in the low parts of North Carolina before.

Hab. Sault de St. Marie.

31. Viburnum *oxycoccos*, Pursh, p. 203.

Eatable and similar to cranberries in taste.

Hab. From Pembina to Lake Superior.

32. Aralia *hispida*, Pursh, p. 209.

Wild Elder. Common on Pennsylvania mountains.

VI. CLASS HEXANDRIA.

33. Allium *angulosum*, Nuttall, p. 214.
The red variety.
34. Smilacina *umbellata*, Pursh, p. 232.
Found likewise in the Alleghany mountains.
In fruit.
Hab. Rainy Lake.
35. Smilacina *stellata*, Pursh, p. 232. Nutt. p. 225.
In fruit.
36. Rumex *brittanicus*, Pursh, p. 248.

VIII. CLASS OCTANDRIA.

37. Oxycoccos *vulgaris*, Pursh, p. 263.
The European cranberry—common in Canada.
Hab. Near Winnepeek river.
38. Epilobium *spicatum*, Nuttall, p. 250.
Commonly called E. *angustifolium*, Pursh, p. 259.
Hab. Near the river St. Peter.

X. CLASS DECANDRIA.

39. Arbutus *uva ursi*, Pursh, p. 283.
Common northwardly and in New Jersey pines.
Hab. Falls of Kakabeka and shores of Lake Superior.
40. Ledum *latifolium*, Pursh, p. 300.
In Canada and Labrador.
Hab. From Rainy Lake to Lake Superior.
41. Monotropa *morisoniana*, Pursh, p. 303.
In shady woods not uncommon, Carolina.
42. Oxalis *corniculata*, Pursh, p. 322.
Common throughout the United States and Europe.

XI. CLASS ICOSANDRIA.

43. PRUNUS **incana*, L. v. Schw.

Mr. Say calls this shrub a cherry, found at the Lake of the Woods, and from a vestige of an umbell, there is little doubt that it belongs to the genus PRUNUS, although there is neither flower nor fruit. If so, it is doubtless an undescribed species.

The young *branches* are very red and angularly grooved; the older gray and verrucose. The *leaves* alternate, on short petioles, elliptically acuminate, finely and subdistantly serrate above, and attenuated into the petiole below, with the margin somewhat revolute. The upper surface smooth and shining, the under pinnately nervose, and remarkably glaucous, a little tomentose. Two large glandules in the axill of each leaf. The traces of a few flowered umbell appear at the commencement of the young branches of the year.

Hab. Islands in the Lake of the Woods.

44. ARONIA *sanguinea*, Nutt. p. 306.

Pyrus sanguinea, Pursh, p. 340.

Destitute of flowers or fruit; but doubtless this Canadian tree.

Hab. Lake of the Woods.

45. CRATAEGUS *elliptica*, Pursh, p. 337.

Not uncommon.

Hab. near Pembina and Lake of the Woods.

46. CRATAEGUS **flexuosa*, L. v. Schw.

Flower and fruit are wanting, but there can be no doubt of the genus from the habit. The leaves greatly resemble those of C. *populifolia*, although they cannot be said to be at all cordate at base. Perhaps it may be the C. *populifolia* of Walter, see Elliott, Sketch, I. p. 553. But the re-

markable glandulosity of the petioles and serratures of the leaves, seems to indicate a separate species. I describe it thus:

Branches flexuosely bent, spreading, with very long, straight, rectangularly divaricate spines, of a shining brown colour from the axills of the leaves; nearly as long as the leaf and petiole. *Leaves* ovate, broad, acutely, but not deeply lobed; lobes crenately serrate, with a conspicuous glandule on each serrature, on petioles half as long as the leaf, which are densely beset with numerous glandules all their length. Upper surface of the leaves smooth and shining; lower nearly smooth, or only sparse hair on the nerves.

Hab. near Rainy Lake.

47. Sorbus *Americana*, Pursh. p. 341.

Common on northern mountains.

Hab. Falls of St. Anthony.

48. Spiraea *opulifolia*, Pursh, p. 342.

Common through the United States.

49. Spiraea *hypericifolia*, Pursh, p. 341.

Not so common as the former.

50. Rosa **Sayi*, L. v. Schw.

This appears to me to be a Rose quite distinct from any American one, although it is past flowering; the germen being manifestly not globose, (which is the case with all the rest except *laevigata*,) nor do I find any European one sufficiently agreeing. I describe it thus:

Germen oblong ovate, perfectly smooth, and proportionably large, crowned by erect calyx leaves, exceeding it in length, which are villous, and expand at summit. Peduncle smooth, or somewhat glandularly hispid, rigid. Common petiole villous and aculeate on the back, with three pairs of ovate, sessile, deeply serrate, small leaflets,

and a single one on the lengthened petiole, furnished at base with clasping, glandulosely villous stipules. Upper side of the leaflets smooth, the underside glaucously villous. The young branches thickly set with thin, unequal, hispid spines.

51. POTENTILLA *fruticosa*, var. *floribunda*, P. p. 355.

Canada and New York.

52. POTENTILLA *norwegica*, Pursh, p. 354.

Common to the United States and Europe.

Hab. Prairies of St. Peter's river.

53. POTENTILLA *tridentata*, Pursh, p. 353.

Common to high mountains and northern latitudes on both continents.

Hab. Falls of Kakabeka.

54. GEUM *album*, Pursh, p. 351.

Although the lower leaves are wanting, the circumstance of the "aristis apice pilosis" appears decisive.

Common in the northern states.

XII. CLASS POLYANDRIA.

55. HUDSONIA *ericoides*, Nuttall, Gen. II. p. 4.

Though in an imperfect condition, this is doubtless the above plant.

Hab. Falls of Kakabeka.

56. DELPHINIUM *virescens*, Nuttall, Gen. II. p. 14.

On the plains of Missouri. I have specimens from the Cherokee country.

57. RANUNCULUS *filiformis*, Pursh, p. 392.

β. **hispidus*.

The imperfect specimens of the collection represent R. *filiformis* in every respect, except that it is impossible to ascertain whether they are repent or not; and, that the

leaves and caulis appear clothed with distant, hispid hair, which I have not observed in my Canadian specimens, nor in those found at Harrisburg, Pennsylvania, on the shores of the Susquehannah.

XIII. CLASS DIDYNAMIA.

58. Hyssopus *anisatus*, Nutt. Gen. II. p. 27.

On the Plains of Missouri and about Lake Superior. (Professor Douglass.)

Hab. From Falls of St. Anthony to Lake Superior.

59. Stachys *aspera*, Nutt. Gen. II. p. 30.

Not rare.

60. Stachys **velutina*, L. v. Schw.

This may possibly be found on future investigation in nature to be only a variety of S. *hispida ;* in the specimens before me it certainly presents a very different appearance.

Stem erect, not branched, quadrangular, villose, or subhispid, about one foot high. *Leaves* alternately opposite, closely sessile, clasping the stem at base, ovate-lanceolate, crenately serrate, and finely sericeously velutinous, or shortly tomentose on the ribs, on both surfaces. *Verticills* about six-flowered; segments of the calyx acutely pointed, pungent, and extremely hispid. Intermediate segment of the lower lip, broadly rotundate. *Corolla* somewhat pilose and apparently blue.

61. Dracocephalum *virginianum*, Pursh, p. 411.

Common in the southern states.

62. Euchroma *coccinea*, Nutt. Gen. II. p. 55.

β. *lutea.*

Bartsia coccinea lutea, Pursh.

The specimens are too imperfect to allow a decisive opinion whether they belong to a species of *Euchroma*,

Nutt. found by me in North Carolina, which is manifestly different not as a mere variety from E. *coccinea*.

63. MELAMPYRUM **brachiatum*, L. v. Schw.

Although unfortunately the specimens before me do not admit of distinguishing a flower, (being badly dried and black,) there can be little doubt from the whole habit and peculiarity of the capsule, (greatly resembling that of M. *cristatum*,) that this constitutes a distinct new species of *Melampyrum*.

Stem terete, somewhat scabrous, naked below, branching by long, naked, adscendent, opposite or whorled branches, which subdivide into trichotomous whorls, with two opposite leaves in the axills. *Leaves* about an inch long, 1–2 lines wide, attenuated into a thin petiole, margin entire, rugose and scabrous on both sides. *Capsules* on short peduncles from the axills of the floral leaves, which become more and more crowded into a kind of spike towards the summit of the branches, without bracteas as far as I can distinguish. *Capsule* obliquely bent downward, acute, containing two large, cylindric, oblong, yellow seeds, in each cell. Height of the whole plant 6–8 inches.

64. GERARDIA *tenuifolia?* Pursh, p. 422.

The leaves are rather too broad and scabrous, but it would scarcely admit of being considered different.

XIV. CLASS TETRADYNAMIA.

65. DRABA *arabis*, Nuttall, II. p. 63.

Draba arabirans, Mx. so labelled in the collection by Mr. Nuttall, and certainly with propriety. It is not, however, the plant so called by Pursh, as Mr. Nuttall clearly points out, and very correctly calls that *Alyssum dentatum*, see Nuttall, Gen. II. p. 63. A rare plant.

XV. CLASS MONADELPHIA.

66. GERANIUM *robertianum*, Nutt. Gen. II. p. 80.
Common in Pennsylvania.

XVI. CLASS DIADELPHIA.

67. PETALOSTEMUM *candidum*, Pursh, p. 461.
Indigenous to the western country.

68. PETALOSTEMUM *violaceum*, Pursh, p. 461.
Likewise peculiar to the western countries.

Both these plants are well described by Michaux, and figured on his Tab. 37, f. 1 and 2.

69. CORYDALIS *glauca*, Pursh, p. 463.
Common among rocky hills.

70. AMORPHA *canescens*, Nutt. Gen. II. p. 92.
Peculiar to the north-western country.

71. LATHYRUS *palustris*, Pursh, p. 471.
Found in Canada by Michaux, and common in Europe.

72. LATHYRUS *venosus*, Pursh, p. 471.
Common in the Pennsylvania mountains.

73. VICIA **tridentata*, L. v. Schw.

The single, but good specimen of this plant, does not agree, I think, with any one described by American authors or Persoon. I therefore venture to point it out by the above name, taken from the singular form of its stipules. It approaches nearest to V. *sylvatica*.

Stem flexuosely bent, subpubescent, angular and much grooved. *Peduncles* equal to the leaves. *Leaflets* numerous, sometimes alternate, sometimes opposite, narrow, oblong, entire, obtuse, with a short mucro, sprinkled with hair on the upper surface, and almost canescently so on the under. *Stipules*, upper ones lanceolate, long, acuminate,

villous, lower ones obversely cuneate and broadly trifid, with strong nerves running to the point of each division, pubescent as well as the calyx and peduncle. Flowers blue and large in proportion.

Hab. Rainy Lake.

74. Astragalus *carolinianus*, Pursh, p. 472.

Common in the mountains of Carolina.

75. Astragalus *hypoglottis?* Nutt. Gen. II. p. 99.

Very imperfect specimen in fruit. Leaflets more ovate than the European specimens.

Hab. Prairies of St. Peter's and Red rivers.

76. Psoralea *esculenta*, Nutt. Gen. II. p. 102.

Peculiar to the north-west.

Hab. Between Chicago and Prairie du Chien, and on the prairies of St. Peter's river.

77. Psoralea *incana*, Nutt. Gen. II. p. 102.

Likewise peculiar to that district.

The fine specimens of the collection differ from Mr. Nuttall's description in being much branched and to all appearance of a larger size.

XVII. CLASS SYNGENESIA.

78. Prenanthes *virgata*, Pursh, p. 498.

There are a number of species of this genus which have fallen under my observation, not distinctly established. The leaves are, however, so variable, that it would be highly improper to establish new ones from single specimens, especially when destitute of radical leaves. The present plant has certainly not occurred to me with exactly this form of cauline leaves, but in other respects it perfectly resembles the P. *virgata* of Pursh.

79. Lactuca *integrifolia?* Nutt. Gen. II. p. 124.

This appears to coincide with Mr. Nuttall's plant if I am not mistaken in the colour of the flower. The leaves are however more lanceolate and acuminate than he describes them.

80. HIERACIUM *canadense*, Michaux, II. p. 86.

β. var. *scabrum*.

Differing from the plant I have been wont to consider as the H. *canadense* of Mx. by smaller, more rigid, and scabrous leaves.

81. HIERACIUM **scabriusculum*, L. v. Schw.

The collection affords but a single specimen, which, however, is so different from the rest of the American species, (not agreeing with any European, as far as I have been able to ascertain,) that I have thought it well to point it out by the following description.

Stem glabrous, firm, erect, terete, much grooved and foliose. *Leaves* alternately sessile, clasping the stem, closely set below, decreasing in size, and becoming more distant upwards; ovate-lanceolate, not exceeding an inch in length below, one-fourth in breadth; distantly and elongately toothed in the margin, which appears somewhat involute. Lower surface glaucous, and distantly beset by short, rigid hair. Upper surface rugose and the margin rendered scabrous by short, thick, close set setæ or teeth, very conspicuous under the lens. Stem divided in summit into several few-flowered branches, the peduncles tomentose, and incrapate above, with a few lanceolate bracteas or floral leaves. Calyx nearly smooth. Flower large, yellow.

Apparently about one foot and a half in height.

82. CARDUUS *muticus*, Pursh, p. 506.

A very imperfect specimen, which, however, decidedly belongs to this species.

83. VERNONIA **corymbosa*, L. v. Schw.

I think there can be no doubt, that this is a new and distinct species of *Vernonia*, although the description from a single specimen may be imperfect.

Stem apparently about one foot high, erect, grooved, somewhat scabrous, and densely covered by proportionally large, suberect leaves. These are sessile, subclasping, lanceolate, acuminate, about one inch and a half long, entire towards the point, sharply serrate below, and about half an inch broad. Upper surface roughly scabrous, the lower remarkably punctate by numerous small, impressed pores, otherwise smooth. *Corymb* terminal, fastigiate, *pedicells* pulverulently subvillous. *Calyx* ovate, imbricate. *Scales* ovate, obtuse, very large, and finely ciliate all round their margin.

Flowers red, of considerable size.

84. Artemisia *sericea*, Nutt. Gen. II. p. 143.

Peculiar to the north-west; labelled by Mr. Nuttall.

Hab. Prairies of St. Peter's and Red rivers.

85. Gnaphalium *margaritaceum*, Pursh, p. 524.

Common in Pennsylvania.

Hab. Rainy Lake.

86. Erigeron *canadense*.

β. **grandiflorum*.

This may be a new species; as, however, the leaves and stem resemble the *canadense* perfectly, and there is but one specimen, I prefer arranging it as a variety. The flowers are more than twice the size of those of E. *canadense*, (with some appearance that the rays were yellow, on short peduncles and pedicells, by no means branching out, crowded together in the summit and axills of the leaves.

87. Inula *scabra?* Nutt. Gen. II. p. 151 and 152.

I am not perfectly satisfied that this is the species de-

scribed by Mr. Nuttall; it is coarser and more scabrous than specimens I have received from him. Its imperfect condition, however, prevents any determination.

88. Inula *amygdalina*, Nutt. Gen. II. p. 153.

Aster amygdalinus auctorum.

Not rare in the United States.

89. Aster *ledifolius*, Pursh, p. 544.

A. *nemoralis*, Nutt. p. 154.

The present specimen of this elegant Aster is more ciliately scabrous than my Jersey ones.

90. Aster *multiflorus?* Pursh.

A small indistinct branch only, which, however, exactly resembles one communicated to me by the above name from Dr. Muhlenberg, except in being scabrous.

91. Aster *puniceus*, Pursh, p. 554.

Common in the United States.

92. Aster *laevigatus*, Pursh, p. 553.

Common in the United States.

93. Solidago *canadensis*, Pursh, p. 535.

Common in the United States.

94. Solidago *graminifolia*, Nutt. Gen. II. p. 162.

(Euthamia,) S. *lanceolata*, Pursh.

Common in Pennsylvania.

95. Achillaea *setacea*, Persoon Synops. II. p. 469.

This species, the only specimen of which is about one foot and a half high, minutely agrees with the description of Persoon.

It has not heretofore been observed in *America*, but is found in Germany, Hungary, and Switzerland.

Hab. Pembina, common in some districts.

96. Helianthus *petiolatus*, Nuttall, in Journal of Academy, vol. II. p. 116.

Resembling, however, more the garden specimens than some I received from Mr. Nuttall.

97. Helianthus *giganteus*, var. *crinitus*, Nuttall, Gen. II. p. 177.

98. Helianthus.

I have not been able to determine this species, which is but indistinctly characterized by the imperfect specimens of the collection.

99. Bidens *minima*, Pursh, 566.

As a variety of β. *cernua*, I think them distinct.

XVIII. CLASS MONOECIA.

100. Urtica *procera*, Pursh, p. 113.
Common in Carolina and western country.

101. Pinus *banksiana*, Pursh, p. 642.
Found likewise on the Canada lakes.

102. Pinus *balsamea*, Pursh, p. 639.
On the mountains.

103. Pinus *nigra*, Pursh, p. 640.
Not rare on Pennsylvania mountains.

104. Pinus *alba*, Pursh, p. 641.
Distinguished by its incurved leaves.

105. Pinus *pendula*, Pursh, p. 645.
Black larch.
Hab. On the northern lakes and streams.

106. Pinus *microcarpa*, Pursh, p. 645.
Without strobilae. Red larch.
Hab. Common along the northern lakes and streams.

107. Thuja *occidentalis*, Pursh, p. 646.
Likewise on Pennsylvania mountains.

XIX. CLASS DIOECIA.

108. SALIX.*

The collection affords three distinct species of Salix, neither of which appear to agree with those known to me, or the descriptions of Persoon. But they are all without fructification, and cannot therefore be correctly determined. The first species has

Long, linear, lanceolate, rigid, acuminate *leaves*, slightly covered in the young ones with short sericeous hair on the underside, perceptible by a lens in the old leaves likewise, they are distantly and slightly toothed in the margin, of a light yellow colour on both sides, subsessile; young branches yellowish, the older red, smooth, but distantly spotted with black verrucae.

109. SALIX.*

Leaves on short petioles, narrow, lanceolate, serrately dentate in the margin, smooth, green on the upper, glaucous on the underside. Approaching to *Salix discolor*.

110. SALIX.*

Leaves on short petioles, ovate-lanceolate, attenuated at both ends; smooth above, densely villous below, entire, or undulately crenate in the margin. Stipules apparently ovate.

Allied perhaps to S. *caprea*.

111. FRAXINUS *sambucifolia*, Pursh, p. 8.

Common in Pennsylvania.

112. EMPETRUM *nigrum*, Nutt. Gen. II. p. 233.

In Labrador and Canada, as well as Europe.

113. POPULUS *balsamifera*, Pursh, p. 619.

In high American latitudes.

Hab. From Pembina to Lake Superior.

114. SHEPHERDIA *argentea*, Nuttall, II. p. 240.

Hippophae argentea, Pursh.

Towards the sources of Missouri.

Hab. Rainy Lake.

115. Shepherdia *canadensis*, Nuttall, Gen. II. p. 241.

Hippophae canadensis, Pursh.

On the borders of the Canadian Lakes.

Hab. From Lake Winnepeek to Lake Superior.

116. Juniperus *prostrata*, Persoon, II. p. 632.

Repens, Nuttall, II. p. 245.

CRYPTOGAMIA.

(a) FILICES.

117. Lycopodium *sabinaefolium*, Michaux, Fl. II. p. 282.

I have specimens from Labrador.

118. Lycopodium *clavatum*, Pursh, p. 652.

Without fructifications.

119. Botrychium *fumarioides*, Pursh, p. 655.

120 Polypodium *vulgare*, Pursh, p. 658.

Common to the United States and Europe.

121. Woodsia *ilvensis*, Pursh, p. 560.

Not uncommon northwardly.

122. Woodsia *hyperborea*, Pursh, p. 560.

After an inspection of the plates of Skuhr, I doubt whether these two plants have not been mistaken one for the other. I have named them as they appeared to me from his figures and the comparisons of my European specimens. Possibly, however, the specimens under consideration belong to a new species altogether.

123. Aspidium *filix femina*, Pursh, p. 664.

Common.

124. ASPIDIUM *dentatum?* Willdenow.

Destitute of fructifications, but very much like Labrador specimens in my collection.

(b) MUSCI FRONDOSI.

125. SPHAGNUM *acutifolium.*

A very common moss in bogs.

(c) MUSCI HEPATICI.

126. MARCHANTIA *polymorpha.*

Destitute of fructifications, but no doubt belonging to this species.

(d) LICHENES.

127. CENOMYCE *rangiferina*, Achar.

The well-known reindeer moss.

128. CENOMYCE *pyxidata*, Achar.

Apparently destitute of fructification.

129. CENOMYCE *vestita*, Achar.

130. CENOMYCE *allotropa*, Achar, one of its supposed varieties.

All these Lichens are common every where.

PART II.—ASTRONOMY.

Astronomical Observations and Calculations made in 1823, *during the Expedition to the Source of St. Peter's River, &c. by* J. Edward Colhoun, *Astronomer, &c. to the Expedition.*

The instruments used in making the following astronomical observations, were,

A brass sextant, of five inches radius, divided by means of a vernier to 30″, made by Cary, London.

A common surveyor's compass, marked to degrees, and having a needle four inches long.

An artificial horizon of mercury.

A patent lever watch, by Robert Roskell, Liverpool.

Except in two or three instances, when the rate of the watch was found, altitudes were taken for time, a few minutes, either before or after the lunar distances were measured.

In giving the data, the error of the watch is indicated as exceeding or being less than apparent time, by having no algebraic sign or the sign — prefixed; the index error continues the same, till otherwise stated; the object to the east is mentioned first; in general, it is the mean of three times, three altitudes or three distances, which is recorded.

Many observations, embracing every kind of which the sextant is capable, are not inserted, because taken at points that cannot be easily designated. They have answered a sufficient purpose in corroborating those here given, and in correcting estimated courses and distances.

It was endeavoured by frequency and variety of observation, to supply the want of better instruments. If this deficiency

had not been occasioned by accidental circumstances, the rapidity and the mode of travelling contemplated, but more especially the exaggerated reports of the difficulties in the country through which we were to pass, would have left little freedom in the selection, with regard either to number, size or kind.

June 10.	8^h 53′ 35″ A. M. and 2^h 47′ 47″ P. M. Alt. Sun's centre - -	97° 37′ 5″
	Index error — 3′ 52″	
	Latitude deduced - - -	41 59 40
	9^h 4′ 42″ A. M. Alt. Sun's centre	101° 18′ 15″
	2^h 47′ 47″ P. M. Do. do. -	97 37 5
	Latitude - - - - -	42 00 6
	Latitude of Chicago - - -	N. 41° 59′ 53″
	Variation of the compass at Chicago, by a mean of two morning amplitudes - - - -	E. 6° 12′ 00″
June 16.	5^h 21′ 23″ P. M. Alt. Sun's U. L.	44° 36′ 40″
	Index error — 4′ 22″	
	Error of watch deduced - -	—0^h 2 31
	5^h 14′ 31″ P. M. Dist. Moon and Sun - - - - - -	106° 11′ 5″
	Longitude deduced* - - - -	90 3 00
	5^h 31′ 4″ P. M. Dist. Moon and Sun	106° 16′ 47″
	Longitude - - - - -	90 6 30
	Longitude of Camp on Wassemon rivulet - - - -	W. 90 4 45

* From Greenwich.

June 17.	00h 8′ 00″ A. M. Alt. Polar Star	84° 8′ 50″
	Latitude deduced - - - -	42 29 53
	00h 21′ 00″ A. M. Alt. Polar Star	84° 20′ 00″
	Latitude - - - - - -	42 30 28
	Latitude of same Camp - -	42° 30′ 10″
June 20.	Mer. Alt. Star α. Aquilæ - -	110° 48′ 00″
	Index error — 3′ 56″	
	Latitude deduced - - - -	43 3 11
	11h 13′ 18″ P. M. Alt. Polar Star	84° 40′ 30″
	Latitude - - - - - -	43 1 45
June 23.	Mer. Alt. Star α. Scorpionis -	41° 57′ 15″
	Index error — 4′ 00″	
	Latitude - - - - -	43 3 55
June 24.	Mer. Alt. Moon's L. L. - -	42° 36′ 45″
	Latitude - - - - - -	43 5 14
	Latitude of Fort Crawford - -	N. 43° 3′ 31″
June 20.	3h 41′ 42″ P. M. Alt. Sun's U. L.	81° 56′ 00″
	Error of watch deduced - -	— 0h 00 16
	11h 00′ 13″ P. M. Dist. Moon's N. L. and Star α. Virginis -	42° 16′ 32″
	Index error — 3′ 56″	
	Longitude deduced - - -	90 49 15
	11h 24′ 49″ P. M. Dist. Star α. Aquilæ and Moon's F. L. -	63° 28′ 42″
	Longitude - - - - -	90 55 45

June 21.	8^h 58′ 8″ A. M. Alt. Sun's U. L.	97° 1′ 45″
	Index error — 3′ 50″	
	Error of watch - - - -	— 0^h 1 46
	Longitude of Fort Crawford	W. 90° 52′ 30″
	Variation of the compass at Fort Crawford by a mean of two morning azimuths - - - -	E. 8° 48′ 52″
June 28.	Mer. Alt. Moon's U. L. - -	73° 22′ 30″
	Index error — 4′ 00″	
	Latitude of Camp - - -	N. 43 47 57
June 29.	Mer. Alt. Star α. Scorpionis -	39° 27′ 20″
	Index error — 3′ 7″	
	Latitude deduced - - -	44 18 37
June 30.	Mer. Alt. Moon's U. L. - -	94° 40′ 00″
	Latitude - - - - -	44 18 38
	Latitude of Camp - - -	N. 44 18 37½
July 2.	Mer. Alt. Star α. Scorpionis -	38° 18′ 00″
	Index error — 4′ 00″	
	Latitude deduced - - -	44 53 48
July 3.	8^h 24′ 23″ A. M. and 3^h 31′ 54″ P. M. Alt. Sun's centre - -	83° 18′ 30″
	Latitude - - - - - -	44 53 50
	Latitude of the mouth of St. Peter's River - - - - -	N. 44° 53′ 49″
	8^h 44′ 27″ A. M. Dist. Sun and Moon - - - - -	64° 13′ 17″
	Longitude deduced - - -	93 17 00

	8^h 52′ 37″ A. M. Dist. Sun and Moon		64° 10′ 30″
	Longitude		93 7 30
July 4.	9^h 24′ 38″ A. M. Dist. Sun and Moon		50° 37′ 20″
	Index error — 3′ 55″		
	Longitude		93 7 00
	9^h 32′ 43″ A. M. Dist. Sun and Moon		50° 34′ 17″
	Longitude		93 1 00
	9^h 40′ 44″ A. M. Alt. Sun's centre		109° 17′ 00″
	Error of watch		— 0^h 2 46
	Longitude of the mouth of St. Peter's River	W.	93° 8′ 7″
	Variation of the compass at the mouth of St. Peter's River by a morning azimuth	E.	10° 28′ 40″
July 12.	Mer. Alt. Star η. Ophinchi		59° 59′ 00″
	Index error — 4′ 00″		
	Latitude of Camp	N.	44 33 59
July 14.	9^h 23′ 49″ P. M. Dist. Star α. Aquilæ and Moon's F. L.		98° 56′ 40″
	Index error — 3′ 45″		
	Longitude of the Crescent	W.	93 56 15
	9^h 35′ 55″ P. M. Alt. Star α. Aquilæ		85° 24′ 7″
	Error of watch		— 0^h 9 36
	9^h 45′ 58″ P. M. Alt. Polar Star		87° 33′ 13″

	Latitude deduced - - -	44° 20′ 26″
July 15.	8^h 2′ 24″ A. M. Alt. Sun's centre	77° 7′ 15″
	9^h 16′ 2″ A. M. Do. Do. -	102 30 15
	Latitude - - - - - -	44 22 28
	Latitude of the Crescent - -	N. 44° 21′ 27″
	Latitude assumed for Great Swan Lake - - - - - -	N. 44° 19′ 00″
	5^h 2′ 43″ P. M. Alt. Sun's centre	46° 20′ 15″
	Index error — 3′ 30″	
	Error of watch deduced - -	— 0^h 10 16
	5^h 17′ 6″ P. M. Dist. Moon and Sun	100° 52′ 41″
	Longitude deduced - - -	94 37 45
	5^h 25′ 1″ P. M. Alt. Sun's U. L.	39° 1′ 45″
	Error of watch - - - -	— 0^h 10 14
	5^h 33′ 5″ P. M. Dist. Moon and Sun - - - - - -	100° 57′ 47″
	Longitude - - - - -	94 35 15
	5^h 46′ 57″ P. M. Dist. Moon and Sun - - - - -	101° 1′ 45″
	Longitude - - - - -	94 31 45
	Longitude of Great Swan Lake	W. 94° 34′ 55″
July 17.	Mer. Alt. Moon's U. L. - -	41° 2′ 30″
	Latitude of Camp - - -	N. 44 30 23
July 18.	Mer. Alt. Moon's U. L. - -	37° 35′ 30″
	Latitude of Camp - - -	N. 44 41 26

	Variation of the compass by an evening amplitude - - -	E. 12° 21′ 20″
July 24.	Mer. Alt. Star α. Aquilæ - -	105° 35′ 15″
	Index error — 4′ 7″	
	Latitude deduced - - -	45 39 51
July 25.	9h 44′ 22″ A. M. Alt. Sun's centre	103° 38′ 15″
	3h 49′ 24″ P. M. Do. Do. -	73 39 45
	Index error — 4′ 00″	
	Latitude - - - - -	45 39 51
July 26.	Mer. Alt. Moon's U. L. - -	77° 8′ 30″
	Index error — 4′ 7″	
	Latitude - - - - -	45 39 55
	Latitude of Lac Travers - -	N. 45° 39′ 52″
July 25.	3h 38′ 56″ A. M. Alt. Moon's U. L.	54° 44′ 00″
	Index error — 4′ 00″	
	Longitude deduced - - -	96 33 45
July 26.	2h 37′ 45″ A. M. Dist. Star α. Arietis and Moon's N. L. -	57° 4′ 5″
	Index error — 4′ 7″	
	Longitude - - - - -	96 39 45
	2h 48′ 47″ A. M. Alt. Star α. Lyræ	75° 51′ 15″
	Error of watch - - - -	0h 00 31
	2h 58′ 3″ A. M. Dist. Star α. Aurigæ and Moon's N. L. - -	99° 4′ 5″
	Longitude - - - - -	96 30 30
	Longitude of Lac Travers -	W. 96° 34′ 30″

Variation of the compass at Lac

		Travers, by a mean of two evening azimuths - - - -	E. 12° 28′ 50″
Aug.	1.	Latitude assumed - - -	N. 47° 46′ 00″
		7^h 33′ 24″ A. M. Alt. Sun's centre	61° 4′ 00″
		Index error — 3′ 55″	
		Error of watch deduced - -	— 0^h 9 9
		7^h 24′ 31″ A. M. Dist. Sun and Moon - - - - - -	68° 43′ 52″
		Longitude on the bank of Red River - - - -	W. 96 53 45
Aug.	5.	Mer. Alt. Sun's U. L. - -	116° 47′ 45″
		Index error — 3′ 59″	
		Latitude of the upper part of Pembina Settlement - - -	N. 48 59 27
Aug.	6.	Mer. Alt. Star α. Aquilæ - -	98° 55′ 10″
		Index error — 4′ 00″	
		Latitude deduced - - -	N. 48 59 57
Aug.	8.	Mer. Alt. Sun's U. L. - -	115° 7′ 15″
		Latitude - - - - - -	48 59 58
		Mer. Alt. Star α. Aquilæ - -	98° 55′ 10″
		Latitude - - - - - -	48 59 57
		Latitude of Camp in the lower part of Pembina Settlement -	N. 48° 59′ 57$\frac{1}{3}$″

According to the three last observations the forty-ninth degree of north latitude crosses Red River, about two miles below the mouth of Pembina River. A post was fixed at the end of the distance

	necessary to complete the degree, carefully measured from the spot, at which the altitudes were taken.	
	No stars, bearing north, were observed, because, either their altitudes were too great at the time of culminating, or the weather was unfavourable.	
	Variation of the compass at Pembina, by a mean of two evening amplitudes - - - -	E. 13° 17′ 25″
Aug. 12.	Mer. Alt. Sun's U. L. - -	111° 35′ 45″
	Index error — 4′ 18″ - -	49 35 55
		— 45
	Latitude of the mouth of Muskrat River - - - - -	N. 49° 35′ 10″
Aug. 13.	Mer. Alt. Moon's U. L. - -	31° 57′ 00″
	Index error — 3′ 52″	
	Latitude deduced - - -	49 53 22
	Mer. Alt. Star α. Aquilæ - -	97° 8′ 00″
	Latitude - - - - -	49 53 30
Aug. 15.	Mer. Alt. Sun's U. L. - -	109° 10′ 00″
	Index error — 4′ 15″	
	Latitude - - - - -	49 53 47
Aug. 16.	Mer. Alt. Sun's U. L. - -	108° 32′ 30″
	Index error — 4′ 7″	
	Latitude - - - - -	49 53 41
	Latitude of the mouth of Assiniboin River - - - -	N. 49° 53′ 35″

Aug. 18.	4^h 2′ 35″ P. M. Alt. Sun's centre	59° 17′ 15″
	Index error — 3′ 52″	
	Error of watch - - - -	— 0^h 2 37
	4^h 12′ 58″ P. M. Dist. Moon and Sun - - - - -	93° 55′ 32″
	Longitude deduced - - -	97 5 15
	4^h 17′ 48″ P. M. Dist. Moon and Sun - - - - -	93° 57′ 00″
	Longitude - - - - -	96 56 30
	9^h 4′ 47″ P. M. Dist. Star α. Aquilæ and Moon's F. L. -	69° 39′ 50″
	Longitude - - - - -	97 00 45
	9^h 21′ 33″ P. M. Alt. Star α. Bootæ - - - - -	53° 38′ 00″
	Error of watch - - - -	— 0^h 2 18
	Longitude of the mouth of Assiniboin River - - -	W. 97° 00′ 50″
Aug. 18.	Mer. Alt. Moon's L. L. - -	34° 48′ 30″
	Index error — 3′ 56″	
	Latitude of Camp on the southern coast of Lake Winnepeek -	N. 50 41 3
Aug. 20.	Mer. Alt. Sun's U. L. - -	104° 32′ 10″
	Index error — 3′ 52″	
	Latitude of Fort Alexander -	N. 50 36 30
	Mer. Alt. Moon's U. L. - -	53° 13′ 30″
	Index error — 3′ 30″	
	Latitude of Portage des Chaines	N. 50 31 30
	9^h 25′ 51″ P. M. Alt. Moon's U. L.	41° 21′ 10″

	Error of watch - - - -	— 0h 1′ 33″
	Longitude - - - - -	95 50 00
	9h 35′ 41″ P. M. Dist. Star α. Pegasi and Moon's F. L. - -	35° 21′ 48″
	Longitude - - - - -	95 59 30
Aug. 21.	0h 9′ 56″ A. M. Dist. Star α. Arietis and Moon's F. L. -	74° 7′ 15″
	Longitude - - - - -	95 55 45
	Longitude of Portage des Chaînes	W. 95° 55′ 5″
Mer. Alt.	Sun's U. L. - - - -	104° 13′ 15″
	Index error — 4′ 15″	
	Latitude of east end of the first Portage du Bonnet - -	N. 50 26 20
Mer. Alt.	Star α. Aquilæ - - - -	96° 26′ 15″
	Index error — 3′ 15″	
	Latitude of the southern extremity of Lake du Bonnet - -	N. 50 14 6
	9h 54′ 54″ P. M. Alt. Moon's U. L.	49° 16′ 50″
	Error of watch - - - -	— 0h 3 31
	Longitude of the southern extreme of Lake du Bonnet - -	W. 95 59 45
Aug. 22.	Mer. Alt. Sun's U. L. - -	104° 11′ 00″
	Index error — 4′ 15″	
	Latitude of Portage du Grand Galet - - - - -	N. 50 7 28
Aug. 24.	Mer. Alt. Star α. Aquilæ - -	96° 42′ 00″
	Index error — 3′ 30″	
	Latitude of the Island de la Grande Equerre - - - - -	N. 50 6 22

	$9^h\ 11'\ 39''$ P. M. Alt. Star α. Bootæ	$41°\ 42'\ 15''$
	Error of watch - - - -	$-0^h\ 8\ 37$
	$9^h\ 37'\ 27''$ P. M. Dist. Moon's F. L. and Star α. Aquilæ -	$72°\ 00'\ 10''$
	Longitude of the Island de la Grande Equerre - -	W. 95 28 45
Aug. 26.	$8^h\ 27'\ 37''$ A. M. Alt. Sun's centre	$67°\ 4'\ 15''$
	$10^h\ 23'\ 44''$ A. M. Do. Do. -	94 49 50
	Index error — 4′ 22″	
	Latitude of Cosse's Island (L. of the Woods) - - - -	N. 49 36 42
Aug. 27.	Mer. Alt. Sun's U. L. - -	$102°\ 37'\ 15''$
	Index error — 4′ 17″	
	Latitude of Red Rock Island	N. 49 11 33
	Mer. Alt. Star α. Aquilæ - -	$99°\ 3'\ 20''$
	Latitude of Sandy Island - -	N. 48 56 4
	Variation of the compass in L. of the Woods, by a mean of the Sun's morning and evening amplitude and an amplitude of the Moon's rising - - -	E. $11°\ 1'\ 25''$
Aug. 28.	$8^h\ 18'\ 33''$ A. M. Alt. Sun's centre	$60°\ 36'\ 15''$
	$9^h\ 46'\ 30''$ A. M. Do. U. L.	85 32 35
	Index error — 4′ 7″	
	Error of watch - - - -	$-0^h\ 2\ 44$
	Latitude of the mouth of Rainy River - - - - -	N. 48 53 40
	$8^h\ 25'\ 42''$ A. M. Dist. Sun and Moon - - - - -	$98°\ 23'\ 35''$
	Longitude deduced - - -	94 11 00
	$8^h\ 44'\ 33''$ A. M. Dist. Sun and	

	Moon - - - - -		98° 14′ 57″
	Longitude - - - - -		94 31 30
	Longitude of the mouth of Rainy River - - - -	W.	94° 21′ 15″
Sept. 2.	Mer. Alt. Sun's U. L. - -		99° 30′ 00″
	Index error — 4′ 00″		
	Latitude of Camp on an Island in Rainy Lake - - - -	N.	48 35 35
	Variation of the compass by a morning amplitude - - -	E.	8° 15′ 00″
Sept. 4.	Mer. Alt. Star α. Aquilæ - -		100° 27′ 15″
	Latitude of the lower Portage of St. Croix River - - -	N.	48 14 5
Sept. 5.	Mer. Alt. Star α. Aquilæ - -		100° 5′ 15″
	Index error — 4′ 00″		
	Latitude of Little Rock Portage	N.	48 24 58
Sept. 6.	Mer. Alt. Star α. Aquilæ - -		99° 33′ 50″
	Latitude of the west end of the French Portage - - -	N.	48 40 40
Sept. 7.	Mer. Alt. Sun's U. L. - -		95° 40′ 15″
	Latitude of the east end of the French Portage - - -	N.	48 40 24
Sept. 11.	Mer. Alt. Sun's U. L. - -		92° 21′ 30″
	Latitude on the south coast of Dog Lake - - - - -	N.	48 49 17
	Latitude assumed for the south end of Dog Portage - - -	N.	48° 38′ 00″
	3^h 54′ 37″ P. M. Alt. Sun's centre		48° 40′ 00″
	Error of watch - - - -		0^h 3 11

	$4^h\ 1'\ 19''$ P. M. Dist. Moon and Sun	$85°\ 48'\ 30''$
	Longitude of the south end of Dog Portage	W. 89 31 00
	Mer. Alt. Star α. Aquilæ	$99°\ 41'\ 30''$
	Latitude of Knife Portage	N. 48 36 50
Sept. 15.	Mer. Alt. Sun's U. L.	$90°\ 9'\ 15''$
	Latitude of Fort William	N. 48 23 33
Sept. 16.	Mer. Alt. Sun's U. L.	$89°\ 15'\ 15''$
	Latitude of an island in Lake Superior	N. 48 27 27
Sept. 17.	Mer. Alt. Sun's L. L.	$43°\ 33'\ 30''$
	Height of observer's eye above the natural horizon	3 feet
	Latitude of an Island	N. 48 40 12
	Mer. Alt. Star α. Aquilæ	$99'\ 24'\ 15''$
	Index error — $3'\ 30''$	
	Latitude of Camp on the north coast of Lake Superior	N. 48 45 00
	$8^h\ 8'\ 3''$ P. M. Alt. Moon's U. L.	$49°\ 48'\ 45''$
	Longitude of same Camp	W. 88 48 45
Sept. 18.	Mer. Alt. Star α. Aquilæ	$99°\ 25'\ 00''$
	Index error — $4'\ 00''$	
	Latitude of the bottom of Bottle Bay	N. 48 45 7
Sept. 24.	Mer. Alt. Star α. Aquilæ	$100°\ 58'\ 30''$
	Latitude of Camp on the north coast of Lake Superior	N. 47 58 20
	Variation of the compass by an evening amplitude	E. $6°\ 21'\ 00''$
Sept. 26.	Mer. Alt. Star α. Aquilæ	$101°\ 3'\ 15''$
	Latitude of Michipicotton House	N. 47 55 58

Sept. 30.	Mer. Alt. Sun's U. L. - -	82° 16′ 30″
	Latitude of the west end of Portage Sault St. Marie - - -	N. 46 30 12
	Mer. Alt. Star α. Pegasi - -	115° 37′ 00″
	Latitude deduced - - -	46 29 58
Oct. 1.	Mer. Alt. Sun's U. L. - -	81° 30′ 20″
	Latitude - - - - -	46 29 57
Oct. 2.	Mer. Alt. Sun's U. L. - -	80° 44′ 5″
	Latitude - - - - -	46 29 29
	Latitude of Fort Brady - -	N. 46° 29′ 55″
Oct. 5.	Mer. Alt. Sun's U. L. - -	79° 42′ 10″
	Latitude of Fort Mackinaw -	N. 45 51 00
Oct. 13.	Mer. Alt. Sun's U. L. - -	80° 39′ 30″
	Latitude deduced - - -	42 19 16
Oct. 14.	Mer. Alt. Sun's U. L. - -	79° 54′ 45″
	Latitude - - - -	42 19 20
	Latitude of Detroit - - -	N. 42° 19′ 18″
Oct. 13.	10^h 52′ 28″ P. M. Moon's L. L.	33° 31′ 40″
	Longitude deduced - - -	82 55 00
	11^h 10′ 12″ P. M. Alt. Star α. Cygni	98° 18′ 50″
	Error of watch - - - -	-0^h 1 11
	11^h 21′ 40″ P. M. Dist. Star α. Arietis and Moon's F. L. -	83° 5′ 00″
	Longitude - - - -	83 3 00
Oct. 14.	3^h 44′ 47″ P. M. Alt. Sun's centre	35° 32′ 15″

Error of watch - - - -	—0h 3′ 13″
3h 50′ 35″ P. M. Dist. Moon and Sun - - - - -	120° 23′ 12″
Longitude - - - -	83 2 30
Longitude of Detroit - -	W. 83° 00′ 10″

PART III.—METEOROLOGY.

METEOROLOGICAL REGISTER

FOR THE YEAR 1822;

Exhibiting the daily mean temperature of the weather from observations taken at several of the military posts of the United States, by Joseph Lovell, M. D. *Surgeon General of the United States' Army.*

The following tables are abstracts of meteorological observations taken at eight of the military posts of the Atlantic coast, extending from Eastport in Maine, to Fort St. Philip near New Orleans; at one on the Mississippi, above New Orleans; and at seven on the north western frontier, from Council Bluffs on the Missouri, to Fort Niagara on Lake Ontario; embracing an extent of 16° 22′ of latitude, and 28° 39′ of longitude. To these have been added, as a standard of comparison, observations taken during the same year near the city of Philadelphia.

It will be perceived that Eastport, Portland, Fort Constitution near Portsmouth, and Newport, are respectively in about the same latitude as Fort St. Anthony, Green Bay, Prairie du Chien, and Council Bluffs; while the average difference of longitude is 21° 39′. On comparing the observations taken in these two sections of the country, the most remarkable difference will be found to consist in the extreme cold of the winter and the proportionate warmth of the summer at the Western, and the comparative equable temperature at the Eastern Posts. In January, which is the coldest month, the thermometer stood at – 25° at Fort St. Anthony; – 23° at Green Bay; – 19° at Prairie du Chien, and – 16° at Council Bluffs. The mean for the month at the first place was 11.68; at the second 13.20;

at the third 14.86; and at the fourth 21.02. In the same month the lowest degree at Eastport was – 9°; at Portland – 10°; at Fort Constitution – 7°; and at Newport 0. The mean for the month at the first place was 17.53; at the second 17.63; at the third 20.50; and at the fourth 26.54. Thus at the west the lowest degree on an average of four observations was – 20.75, and the mean for the month 15.79, while at the East the average lowest degree was – 6.50, and the mean for the month 20.55, making the difference for the month 4.76.

In July, which is the hottest month, the weather was proportionately warm at the west. Thus the highest degree, on our average of four observations, is 96°; and the mean for the month 75.31, while at the east the highest degree is 83 and the mean for the month 68.82; making a difference of 6.49. The mean for the year at the four western posts is 46.04; and at the four eastern 47.23, a difference of 1.19 only.

The centre of these sixteen stations lies between Norfolk and Annapolis; taking therefore these two posts, and the three northern and the three southern ones, which are respectively about equidistant from this centre, it will give 53.91 as the mean temperature for the year throughout the country; which is about the same as that of Detroit in Michigan Territory.

The difference in the range of the thermometer was 27°; it being 133° at the west, and 106 at the east. At the most southern station it was but 43°. The result of forty-eight monthly observations of the course of the winds at the western posts is N. W. 20—S. W. 17—N. 5—N. E. 2—S. E. 2—W. 1—S. 1. At the east; N. W. 14—S. W. 14—S. 11—S. E. 3—N. 3—W. 2—N. E. 1. The N. W. and S. W. are therefore decidedly the prevailing winds, being in the proportion of 65 to 31; and it is remarkable that the proportion of S. W. winds in the summer; and of N. W. winds in the winter at the western is exactly the same as at the Eastern Posts.

At the west the proportion of fair weather to cloudy is as 17 to 7; and at the east as 11 to 1. The proportion of fair weather at the east is to that at the west, as 4 to 3, nearly.

On comparing these results with the most accurate accounts we have of the climate of the Eastern States on their first settlement, we shall find that it was much the same as that of the north western frontier at the present time. The winters were much more severe, the summers warmer; and the mean temperature of the year probably about the same that it now is.

Similar changes are believed to have taken place in Europe; and this fact will in a great measure account for the contradictory statements of writers on this subject; some of whom affirm that the climate of Europe and the eastern part of the United States is warmer, some that it is colder; and others that there is no material change. The one party stating, by way of proof, that the Rhine, Danube, and Tyber rivers, the Euxine and the borders of the Mediterranean Sea, &c. were frozen during the winter months of former years, and that many plants could not be preserved through the winter, even in the north of Italy, which are now successfully cultivated in much higher latitudes; while the other asserts that at present many kinds of grain and fruit will not come to perfection in large districts of country, where they formerly flourished and were perhaps indigenous.

The truth probably is, that the mean annual temperature is about the same; but that the climate is much milder in consequence of the great reduction in the range of the thermometer—that the quantity of heat is the same; but that it is now more equally distributed throughout the year. This supposition will explain the facts above stated. For on comparing the monthly mean temperature of the western and eastern posts as given in these tables, we shall find that, although in January it is much lower at the west, yet the spring advances more rapidly; that even by March it is 2° 45′ higher than at the eastern posts; and that by July the difference is 0° 49′. Of course, such plants will thrive as require a warm summer to bring them to perfection; and are yet hardy enough, with due care and a proper exposure, to withstand a severe winter; while the more delicate and sensible ones, which flourish un-

der a milder summer's sun, will be frozen up with the surrounding rivers, lakes, and seas.

The causes of this change have also been the subject of no little dispute; but it is thought that numerous circumstances connected with the rapid settlement of the United States will show that it has been produced mainly by the clearing of the country, and the cultivation of the soil. Had accurate observations been kept, it is believed that the change in the climate of the United States would appear to have been as rapid, in comparison with that in Europe, as the increase of population and the extension of cultivation has been unexampled; and that the effect has in both cases borne as exact a proportion to the cause, as could be expected in a subject susceptible of so many variations from accidental and extrinsic circumstances.

How far the character of the diseases of a country are affected by difference of temperature can of course only be decided by numerous observations, many circumstances however render it probable that whether observations are made at various places within the same period, or at the same place through a succession of years, we shall find a close connection between the temperature of the several parts of the year and the diseases of the place or period.

From the sick reports of the army, intermittent and remittent fevers appear at present to be the prevailing diseases of the greater part of our country, and there is reason to believe that the proportion of remittents has not only increased within a few years, but that they are much more frequently combined with symptoms of derangement of the biliary organs.

Out of 7000 cases of acute disease, upwards of 3000 were of fevers of an intermittent and remittent type, 1750 of inflammatory complaints common to all parts of the country during the winter months; and of the remainder, the greater part were of disorders peculiar to the life, habits, and duties of a soldier in all situations. At the western posts by far the greater proportion of cases are intermittents. At the southern and middle Atlantic stations, remittents of a decidedly

bilious character prevail to a greater or less extent, and during the present year, (1822,) the bilious remittent or yellow fever was unusually fatal at several posts, and more especially at and near Pensacola in Florida, the first death occurred about the 7th of August; there were upwards of 20 between the 13th and 20th of the month, and by the end of September it is stated that more than 200 died out of a population of about 1000.

By the tables it will be observed, that from the 17th of July to the 2d of September, the daily mean temperature was steadily as high as 80½° with the exception of one day, and below 81½° only three days during that period. The mean temperature for the month of August was 82.22, and the range of the thermometer but 14; the highest degree being 89, and the lowest 75.

Even as early as June, there appears to have been a peculiarly unhealthy state of the atmosphere; and the very intelligent surgeon of the post, Dr. M'Mahon, in his report on the 30th of September states, that "the month of June was ushered in by the prevalence of a fatal distemper among the brute animals, its operation was particularly marked upon dogs; foxes, and panthers, in the woods, suffered very severely, the mortality among them was indeed immense, numbers of them were found dead in every direction, and it is somewhat singular that they were generally found in troops of four, five, and six, collected about the same spot." Whether the diseases of our country are more fatal than formerly, and if so, whether it arise from the malpractices of the professors of the healing art, as appears of late to be the opinion of some of them, is believed to be somewhat problematical, at any rate, it is but reasonable to defer a decision on so important a subject, until we shall have collected a series of well attested facts; and not to mistake the suggestions of an overweening vanity for the results of calm investigation and practical experience.

Meteorological Register for the Month of JANUARY, 1822.

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH AND MEAN DAILY TEMPERATURE.																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Eastport, (Me.) .	44° 44′	67° 04′	22.0	33.0	16.5	6.5	−2.5	4.0	9.5	22.5	22.5	1.5	4.5	26.5	23.5	−2.5	19.0	9.5	1.0	31.0
Portland, (Me.) -	43 38	70 18	22.0	29.5	16.0	6.0	0.0	5.0	10.5	26.5	16.5	3.5	3.5	22.5	16.0	0.5	16.5	9.5	8.5	27.5
Ft. Constit'n, (N.H.)	43 04	70 49	26.0	32.0	19.0	9.5	0.5	10.0	14.0	29.5	26.5	9.0	9.5	32.0	20.5	−1.5	21.5	16.5	7.5	29.5
Newport, (R. I.)	41 30	71 18	38.5	33.5	31.5	15.0	5.5	23.5	27.0	35.0	30.0	14.0	18.0	32.5	24.0	12.0	31.0	30.0	16.0	36.5
Philadelphia, (Pa.)	39 57	75 09	34.0	35.0	33.0	13.0	9.0	25.0	27.0	35.0	27.0	16.0	18.0	29.0	22.0	9.0	31.0	24.0	21.0	29.0
Annapolis, (Md.)	38 58	76 27	37.5	35.5	18.5	14.0	15.5	31.5	31.5	34.5	32.0	18.5	24.0	28.5	28.5	21.0	36.5	30.0	24.5	34.0
Norfolk, (Va.) -	36 58	76 16	44.5	51.0	44.5	25.5	39.5	35.5	42.5	53.5	44.0	46.5	44.5	34.5	44.0	32.0	40.0	41.0	39.5	43.0
Pensacola, (Fl.) -	30 24	87 14	55.0	56.0	49.0	44.5	33.0	46.5	56.0	52.5	47.5	45.5	47.5	46.0	47.5	44.5	50.5	54.5	55.5	54.0
Ft. St. Philip, (La.)	29 29	89 21	59.0	55.5	51.0	45.0	41.0	51.5	59.0	48.5	43.5	45.5	45.5	46.0	45.0	49.5	54.5	57.5	56.5	58.5
Baton Rouge, (La.)	30 26	91 18	53.5	42.5	48.5	46.0	50.0	47.5	55.5	50.5	42.5	32.5	31.0	51.5	49.5	45.5	46.0	63.5	61.5	66.0
Council Bluffs -	41 25	95 43	16.5	22.5	2.0	−0.5	34.0	37.5	35.0	12.5	−0.5	9.5	25.5	21.0	11.5	25.0	11.5	20.0	35.5	22.0
Fort St. Anthony	44 53	93 08	4.5	16.5	−15.	−9.0	20.0	6.0	17.5	−3.5	−5.0	10.5	21.5	13.5	1.5	13.0	−1.5	13.5	32.5	13.5
Prairie du Chien	43 03	90 52	20.0	4.5	−8.5	−5.5	24.5	12.0	25.5	1.5	4.5	8.5	21.5	18.5	7.5	15.5	3.5	20.5	38.5	21.0
Green Bay - -	44 40	87 00	23.5	11.5	−9.5	−4.5	11.0	9.5	19.5	3.5	−6.5	−1.5	19.0	17.0	3.0	18.0	4.5	7.0	34.5	35.0
Mackinac, (Mich.)	45 51	85 05	22.5	14.5	−2.5	−0.5	7.5	14.0	18.5	9.5	0.5	7.0	22.0	11.5	−6.0	10.0	−2.0	3.5	23.5	33.0
Detroit, (Mich.) -	42 19	83 00	34.0	27.5	18.5	4.5	4.0	22.5	28.0	30.5	23.5	9.5	13.0	24.5	4.0	18.5	23.5	10.0	30.0	42.5
Fort Niagara,(N. Y.)	43 15	79 05	33.0	22.5	17.5	8.5	10.0	24.5	25.0	33.0	17.5	13.0	21.5	27.5	2.5	12.5	23.5	12.5	22.5	41.5

Meteorological Register for the Month of JANUARY—*continued.*

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH, &c.													Maxim.	Minim.	Mean Temp.	Prevailing Winds.
			19	20	21	22	23	24	25	26	27	28	29	30	31				
Eastport, (Me.) -	44° 44'	67° 04'	39.5	32.0	32.5	36.5	20.5	−4.5	−1.5	14.0	30.5	32.0	31.5	23.5	17.0	40	−9	17.53	N. W.
Portland, (Me.) -	43 38	70 18	36.5	35.0	35.0	39.5	17.0	−3.5	2.0	13.5	26.5	28.0	35.5	21.5	20.0	44	−10	17.63	N.
Ft. Constit'n, (N.H.)	43 04	70 49	40.0	36.5	37.5	39.5	18.0	−0.5	3.5	14.5	26.5	30.5	31.5	27.5	20.5	44	−7	20.55	N. W.
Newport, (R. I.)	41 30	71 18	40.0	36.5	38.5	41.5	17.0	3.5	7.5	26.0	38.0	32.5	34.5	37.0	27.5	45	0	26.54	N. W.
Philadelphia, (Pa.)	39 57	75 09	37.0	39.0	38.0	42.0	20.0	4.5	8.0	22.0	29.0	33.0	36.0	36.0	35.5	47.5	−.75	26.30	N. W.
Annapolis, (Md.)	38 58	76 27	37.5	36.0	37.5	39.0	25.5	14.5	18.0	25.5	32.5	35.5	37.0	38.0	36.0	44	8	29.28	N. W.
Norfolk, (Va.) -	36 58	76 16	54.5	52.0	51.5	52.5	43.0	30.0	28.0	35.0	42.5	44.0	46.5	51.5	51.5	60	20	43.73	N. W.
Pensacola, (Fl.) -	30 24	87 14	56.5	59.0	60.0	55.5	54.0	48.5	46.5	52.5	59.0	61.5	64.0	61.5	47.5	70	22	51.83	N. E.
Fort St. Philip, (La.)	29 29	89 21	59.5	58.5	57.5	53.5	50.5	49.5	52.5	59.5	61.5	61.5	68.0	52.5	43.5	71	31	52.94	N. E.
Baton Rouge, (La.)	30 26	91 18	59.5	62.0	53.5	57.5	56.0	51.5	44.5	56.5	58.0	60.0	66.0	42.5	39.5	70	30	52.37	S. E.
Council Bluffs -	41 25	95 43	30.5	38.5	45.5	15.5	23.5	17.5	23.5	36.0	36.5	2.5	6.5	15.5	17.0	59	−16	21.02	N. W.
Fort St. Anthony	44 53	93 08	13.5	36.5	39.5	12.5	9.5	3.5	19.5	33.0	29.5	−1.5	−8.5	−2.0	25.5	44	−25	11.68	NW. SW
Prairie du Chien	43 03	90 52	22.0	37.5	42.5	23.5	8.0	0.5	12.5	30.5	31.5	13.0	0.0	2.5	3.0	57	−19	14.86	N. W.
Green Bay - -	44 40	87 00	24.0	33.5	41.0	14.0	1.5	−0.5	10.5	30.0	33.5	18.0	−3.5	2.5	11.5	53	−23	13.20	S. W.
Mackinac, (Mich.)	45 51	85 05	21.5	32.5	34.5	4.5	−12.	−9.5	13.5	23.5	25.5	17.5	−3.5	−2.5	−1.5	38	−18	10.53	W.
Detroit, (Mich.) -	42 19	83 00	36.5	35.5	42.5	31.5	8.5	6.5	12.0	27.0	36.5	36.5	28.0	20.0	23.5	48	−14	22.94	N.
Fort Niagara, (N. Y.)	43 15	79 05	36.5	30.5	40.5	29.5	3.5	4.0	8.0	23.0	34.5	32.5	27.0	18.0	23.5	48	0	22.40	W.

Meteorological Register for the Month of FEBRUARY, 1822.

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH AND MEAN DAILY TEMPERATURE.															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Eastport, (Me.) -	44° 44′	67° 04′	13.5	17.0	22.5	32.5	12.5	28.5	9.5	13.0	27.0	25.5	21.5	17.0	9.0	12.5	14.5	24.5
Portland, (Me.) -	43 38	70 18	24.5	22.5	21.0	28.0	16.0	28.0	9.5	18.5	24.5	20.0	16.5	22.5	12.5	10.5	15.0	25.5
Ft. Constit'n, (N. H.)	43 04	70 49	24.0	30.0	24.5	32.5	18.5	26.0	13.5	18.5	23.5	25.5	18.5	24.5	18.0	16.0	21.5	24.5
Newport, (R. I.)	41 30	71 18	27.5	24.5	31.0	32.5	26.0	35.5	17.5	26.0	35.5	29.5	26.0	33.0	26.0	24.5	21.5	37.0
Philadelphia, (Pa.)	39 57	75 09	29.0	29.0	33.0	30.0	13.0	29.0	13.0	21.0	29.0	27.0	21.0	30.0	28.0	26.0	21.0	31.0
Annapolis, (Md.)	38 58	76 27	33.5	30.0	33.5	32.0	28.5	32.5	23.5	28.5	32.5	31.0	25.5	39.5	38.0	34.0	29.0	34.5
Norfolk, (Va.) -	36 58	76 16	45.0	43.5	36.0	47.5	43.5	45.5	37.0	37.5	44.5	42.5	40.5	47.0	52.5	48.5	40.0	49.5
Pensacola, (Fl.) -	30 24	87 14	43.0	45.5	47.5	47.0	45.5	51.0	39.5	45.5	48.5	39.5	36.5	44 5	48.5	53.5	5.95	63.0
Ft. St. Philip, (La.)	29 29	89 21	41.5	45.5	53.0	45.5	47.5	47.0	42.0	42.5	49.5	38.5	36.5	46.5	51.5	58.0	58.5	64.0
Baton Rouge, (La.)	30 26	91 18	44.0	43.5	47.0	49.5	49.0	47.0	41.0	44.0	51.5	33.5	36.5	43.5	50.0	55.5	61.0	66.0
Council Bluffs -	41 25	95 43	19.5	23.5	6.5	24.5	9.5	11.5	31.5	35.0	18.0	27.5	44.5	45.5	41.5	63.5	46.5	32.5
Fort St. Anthony	44 53	93 08	−5.5	20.5	−10.	2.5	−4.5	−7.0	17.0	21.0	3.5	18.0	31.5	28.0	27.0	33.0	38.5	29.5
Prairie du Chien	43 03	90 52	6.0	14.5	1.5	4.0	0.5	−4.5	20.5	23.5	5.5	17.5	32.5	35.5	32.5	30.0	38.5	31.0
Green Bay - -	44 40	87 00	12.5	18.0	12.5	5.5	12.5	−3.5	16.5	16.0	10.5	3.5	27.0	16.5	16.5	22.5	37.0	34.5
Mackinac, (Mich.)	45 51	85 05	8.5	14.5	9.5	−3.5	10.5	−2.5	5.5	11.5	5.0	8.0	19.5	3.5	9.5	9.5	23.0	33.5
Detroit, (Mich.)	42 19	83 00	20.5	21.5	28.5	18.5	30.0	23.5	18.0	29.5	29.5	21.5	30.5	22.5	19.5	22.5	25.5	44.5
Fort Niagara, (N. Y.)	43 15	79 05	20.0	21.3	24.0	20.5	25.5	17.0	11.0	27.5	29.5	15.5	25.5	18.0	18.0	20.5	19.5	40.5

Meteorological Register for the Month of FEBRUARY—*continued.*

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH, &c.												Maxim.	Minim.	Mean Temp.	Prevailing Winds.
			17	18	19	20	21	22	23	24	25	26	27	28				
Eastport, (Me.) -	44° 44′	67° 04′	38.0	25.0	16.0	24.5	37.5	41.0	22.5	26.5	26.0	14.5	33.5	38.5	46	1	22.62	N. W
Portland, (Me.) -	43 38	70 18	37.5	25.5	26.0	22.5	39.0	39.5	22.0	30.5	18.0	20.0	36.0	40.5	48	4	24.02	W.
Ft. Constit'n, (N. H.)	43 04	70 49	37.5	30.0	28.0	28.5	40.0	45.0	23.5	29.5	21.0	23.5	38.5	42.5	47	9	23.93	NW. S.
Newport, (R. I.)	41 30	71 18	39.5	33.0	29.5	37.0	45.0	41.5	26.5	38.5	20.0	30.5	39.0	46.5	55	12	31.60	S. W.
Philadelphia, (Pa.)	39 57	75 09	39.0	30.0	22.0	29.0	52.0	45.0	31.0	37.0	22.3	35.0	47.0	54.0	64	11	30.50	N. W.
Annapolis, (Md.)	38 58	76 27	41.5	34.0	34.0	38.5	51.5	48.5	36.5	40.5	28.5	38.5	48.0	53.5	66	16	35.13	S.
Norfolk, (Va.) -	36 58	76 16	62.0	50.5	44.0	51.5	65.5	62.5	50.0	48.0	43.5	49.5	55.5	60.0	68	34	48.44	N. W.
Pensacola, (Fl.) -	30 24	87 14	62.0	49.5	53.0	65.5	59.5	58.0	54.5	55.0	52.5	52.0	57.5	60.5	70	26	51.34	S. W.
Ft. St. Philip, (La.)	29 29	89 21	61.0	47.5	54.0	63.5	58.0	53.0	54.0	54.5	52.0	55.5	61.5	62.0	69	28	51.59	N. E.
Baton Rouge, (La.)	30 26	91 18	57.5	43.5	44.5	66.5	55.5	47.5	48.5	49.0	45.5	49.5	62.5	62.5	72	28	49.71	N. W.
Council Bluffs -	41 25	95 43	35.5	43.5	38.0	34.5	19.5	22.5	27.5	25.5	37.0	43.0	46.0	44.0	60	–4	32.87	N. W.
Fort St. Anthony	44 53	93 08	16.5	36.0	29.0	29.0	23.0	16.0	17.0	10.5	26.0	35.5	36.5	43.5	46	–20	19.92	S. W.
Prairie du Chien	43 03	90 52	21.0	29.5	36.5	35.0	31.5	27.0	26.0	12.0	30.0	41.0	41.5	48.0	60	–18	23.73	N. W.
Green Bay - -	44 40	87 00	20.5	21.5	36.0	34.5	26.5	19.5	32.5	13.5	22.0	37.5	42.5	37.5	52	–20	21.40	S. W.
Mackinac, (Mich.)	45 51	85 05	12.5	12.0	29.0	31.5	25.5	9.5	20.5	5.5	12.0	29.0	36.5	40.0	46	–10	15.31	W.
Detroit, (Mich.) -	42 19	83 00	30.5	26.0	34.0	36.5	43.5	33.5	34.0	28.5	25.5	36.5	52.5	60.0	68	10	30.15	S.
Fort Niagara, (N. Y.)	43 15	79 05	28.5	22.0	23.5	33.0	41.5	27.0	26.0	23.0	16.5	45.5	47.5	50.5	58	6	27.09	S. W.

Meteorological Register for the Month of MARCH, 1822.

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH AND MEAN DAILY TEMPERATURE.																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Eastport, (Me.) -	44° 44′	67° 04′	44.0	36.5	41.5	31.5	37.5	40.5	28.5	22.0	19.5	27.5	32.5	38.0	21.5	26.5	31.5	36.5	36.0	36.5
Portland, (Me.) -	43 38	70 18	46.5	41.5	40.0	34.5	41.0	40.5	34.0	23.5	21.5	28.5	35.5	40.5	27.5	28.0	32.5	37.0	36.0	36.5
Ft. Constit'n, (N. H.)	43 04	70 49	46.5	40.0	42.5	37.5	40.0	42.5	36.0	27.5	22.5	26.5	37.5	41.5	32.5	28.0	35.5	41.5	42.0	38.5
Newport, (R. I.)	41 30	71 18	46.0	48.5	44.5	37.5	38.0	41.5	39.5	32.5	27.5	35.5	43.5	35.5	35.5	31.0	34.5	37.5	42.0	42.0
Philadelphia, (Pa.)	39 57	75 09	54.0	53.0	38.0	39.0	45.0	50.0	47.0	37.0	30.0	35.0	45.0	50.0	38.0	29.0	33.0	34.0	46.0	46.0
Annapolis, (Md.)	38 58	76 27	56.0	50.0	42.0	41.5	46.5	50.0	51.5	41.5	36.0	37.5	43.5	53.0	41.5	36.0	35.5	37.5	47.0	53.5
Norfolk, (Va.) -	36 58	76 16	63.0	65.0	57.5	48.0	49.5	55.0	62.0	55.5	48.0	44.0	52.5	58.5	55.5	49.5	48.0	44.0	51.0	58.0
Pensacola, (Fl.) -	30 24	87 14	65.5	66.0	51.0	52.5	53.5	57.0	60.5	67.0	64.5	51.5	63.0	65.5	64.0	66.0	62.0	63.5	52.0	60.5
Ft. St. Philip, (La.)	29 29	89 21	65.5	68.5	54.0	52.0	54.0	59.0	63.5	66.5	63.5	58.5	61.5	63.0	64.0	66.5	63.0	62.5	58 5	62.0
Baton Rouge, (La.)	30 26	91 18	67.0	68.5	48.5	49.0	53.5	61.5	68.0	66.0	58.5	60.5	57.5	62.5	63.0	64.5	65.0	55.5	54.5	64.0
Council Bluffs -	41 25	95 43	39.5	36.5	41.5	49.0	49.5	47.0	53.0	44.5	42.0	48.5	59.0	45.5	37.5	36.0	33.0	53.0	55.5	62.5
Fort St. Anthony	44 53	93 08	33.5	21.5	29.5	44.5	39 5	38 5	43.0	47.0	43.5	47.0	47.5	33.0	27.0	29.5	35.5	48.5	41.5	38.5
Prairie du Chien	43 03	90 52	39.5	25.0	27.5	39.0	43.5	40.0	39.5	44.0	40.0	39.5	47.5	41.0	31.0	27.5	32.0	38.0	42.0	52.0
Green Bay - -	44 40	87 00	47.5	26.5	31.5	40.0	43.5	28.5	27.5	30.5	28.5	36.0	49.5	34.5	24.5	24.5	28.5	40.5	39.5	42.0
Mackinac, (Mich.)	45 51	85 05	39.5	27.5	24.5	34.5	38.0	28.5	25.5	24.5	24 5	30.0	36.5	26.0	16.5	17.0	28.5	33.5	32.5	31.0
Detroit, (Mich.) -	42 19	83 00	54.5	48.0	32.5	41.0	50.5	42.0	40.0	38.0	35.5	40.0	52.0	47.5	33.5	28.5	36.0	40.0	44.5	44.5
Fort Niagara, (N. Y.)	43 15	79 05	48.5	44.5	30.0	35.5	46.5	39.5	31.5	27.5	27.5	30.0	46.0	38.0	28.5	23.5	27.5	33.5	38.5	32.0

Meteorological Register for the Month of MARCH—*continued.*

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH, &c.													Maxim.	Minim.	Mean Temp.	Prevailing Winds.
			19	20	21	22	23	24	25	26	27	28	29	30	31				
Eastport, (Me.) -	44° 44′	67° 04′	32.5	37.5	31.5	33.5	35.0	29.5	28.0	33.0	31.5	41.0	34.0	27.5	28.0	55	10	32.05	W.
Portland, (Me.) -	43 38	70 18	33.5	40.0	35.5	35.5	36.0	33.5	34.5	44.0	40.0	44.5	33.5	29.5	34.0	58	15	35.53	SW. W.
Ft. Constit'n, (N. H.)	43 04	70 49	36.5	41.0	40.0	38.0	35.5	36.0	38.0	45.0	42.5	49.5	38.0	33.5	36.0	55	16	38.53	S.
Newport, (R. I.)	41 30	71 18	40.5	45.5	40.5	40.5	39.0	40.5	37.5	43.5	45.5	48.0	37.0	37.5	38.5	55	25	38.44	N. W.
Philadelphia, (Pa.)	39 57	75 09	50.0	46-0	44.0	44.0	42.0	43.0	44.0	50.0	57.0	60.0	39.0	40.0	48.0	68	21	43.42	NW. SW.
Annapolis, (Md.)	38 58	76 27	59.0	47.5	46.0	46.0	46,0	44.5	46.5	53.5	56.0	59.5	42.5	45.0	47.5	74	26	46.26	N. W.
Norfolk, (Va.) -	36 58	76 16	62.5	60.5	56.5	56.0	60.0	54.0	56.5	60.0	60.0	70.5	60.5	55.5	56.5	72	40	55.72	N. W.
Pensacola, (Fl.) -	30 24	87 14	65.5	68.5	67.0	70.0	70.5	65.5	66.0	66.5	67.5	69.5	60.5	56.5	60.0	77	40	61.47	NE. SW.
Ft. St. Philip, (La.)	29 29	89 21	66.5	69.0	70.5	72.5	65.5	66.5	70.5	69.0	72.5	71.5	63.5	61.5	61.0	76	44	64.09	NE. SE.
Baton Rouge, (La.)	30 26	91 18	66.5	70.0	67.0	65.5	63.5	65.0	74.5	74.5	72.5	64.5	50.5	47.5	54.5	83	38	62.05	S.
Council Bluffs -	41 25	95 43	55.5	47.5	31.0	27.0	41.5	54.5	56.0	34.5	35.5	26.5	41.5	49.5	57.5	80	18	44.81	N.
Fort St. Anthony	44 53	93 08	41.5	31.5	25.5	25.5	35.5	47.5	55.5	33.5	32.0	21.0	33.5	35.5	42.5	68	14	37.39	N. W.
Prairie du Chien	43 03	90 52	45.0	41.0	28.0	26.5	28.0	40.0	50.5	53.0	34.5	23.5	37.0	37.5	44.5	69	14	38.01	N. W.
Green Bay - -	44 40	87 00	39.0	34.5	23.5	26.0	29.5	35.5	40.5	61.0	45.5	27.0	28.5	29.5	37.0	71	11	34.86	S. W.
Mackinac, (Mich.)	45 51	85 05	34.5	24.5	20.5	18.5	21.0	29.0	34.0	35.5	40.0	24.5	22.5	25.5	35.5	48	9	28.56	W.
Detroit, (Mich.) -	42 19	83 00	51.5	43.5	41.5	43.5	38.5	44.5	49.5	62.5	55.5	43.0	38.5	42.0	47.5	69	26	43.71	S.
Fort Niagara, (N. Y.)	43 15	79 05	34.0	34.5	33.0	40.5	30.5	34.0	35.5	38.5	51.5	38.5	28.5	31.5	35.5	54	18	35.25	W.

Meteorological Register for the Month of APRIL, 1822.

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH AND MEAN DAILY TEMPERATURE.															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Eastport, (Me.) -	44° 44′	67° 04′	34.0	29.0	37.0	32.5	32.5	29.5	40.0	35.0	32.5	31.5	35.5	34.0	34.5	36.0	37.5	35.5	41.5
Portland, (Me.) -	43 38	70 18	40.5	31.0	44.0	38.0	37.5	34.0	44.5	42.5	34.0	35.5	40.5	40.5	39.5	39.5	41.0	40.0	41.5
Ft. Constit'n, (N. H.)	43 04	70 49	41.5	36.5	44.5	40.0	45.5	40.5	48.5	47.0	38.0	39.5	43.5	46.0	42.0	43.0	42.5	41.5	42.5
Newport, (R. I.)	41 30	71 18	41.5	36.0	46.5	41.0	43.5	41.5	47.0	45.5	39.5	41.5	50.5	46.5	45.0	51.5	45.0	46.0	48.5
Philadelphia, (Pa.)	39 57	75 09	51.0	42.0	52.0	45.0	50.0	47.0	53.0	52.0	42.0	46.0	52.0	50.0	54.0	54.0	48.0	47.0	51.0
Annapolis, (Md.)	38 58	76 27	48.0	39.5	58.5	48.0	61.5	44.5	48.5	62.5	48.0	54.0	58.5	50.5	60.5	66.0	54.5	52.0	54.5
Norfolk, (Va.) -	36 58	76 16	56.5	47.0	64.0	59.5	71.0	49.5	60.5	72.5	60.5	70.5	69.0	57.5	69.5	70.5	55.5	62.5	59.5
Pensacola, (Fl.) -	30 24	87 14	61.0	61.5	63.5	65.5	67.0	71.0	70.0	71.0	73.5	73.0	74.0	74.5	75.5	70.0	67.0	76.0	74.0
Ft. St. Philip, (La.)	29 29	89 21	57.0	60.5	64.5	65.0	71.5	72.0	72.5	72.5	75.5	73.5	74.5	77.0	75.5	71.5	71.5	75.0	76.5
Baton Rouge, (La.)	30 26	91 18	55.0	60.5	66.5	64.0	68.5	72.5	71.5	73.5	76.5	73.5	76.0	76.5	75.5	63.0	66.5	75.5	68.5
Council Bluffs -	41 25	95 43	44.5	50.5	52.5	43.5	42.5	59.0	34.0	36.5	33.5	33.5	38.0	42.5	34.0	31.5	31.0	34.5	42.5
Fort St. Anthony	44 53	93 08	37.5	36.0	34.5	40.0	36.0	51.0	25.5	32.5	37.5	27.5	38.5	38.0	34.5	24.0	33.5	33.5	39.0
Prairie du Chien	43 03	90 52	42.0	39.5	40.0	43.5	41.0	31.5	36.0	40.5	38.0	32.5	40.0	41.0	38.5	23.5	34.5	34.5	31.5
Green Bay - -	44 40	87 00	33.5	39.5	37.0	42.5	36.0	46.0	30.5	25.5	32.5	32.5	38.5	36.0	34.5	30.0	30.5	35.5	36.5
Mackinac, (Mich.)	45 51	85 05	25.5	32.5	25.5	30.0	31.5	33.5	23.5	24.5	29.5	31.5	37.5	33.5	36.5	26.0	26.0	32.5	31.5
Detroit, (Mich.) -	42 19	83 00	36.0	49.5	43.5	47.0	38.5	43.0	47.5	33.5	36.5	49.0	42.5	43.5	55.5	45.0	37.0	39.5	46.0
Fort Niagara, (N. Y.)	43 15	79 05	28.5	38.5	33.5	34.0	31.5	33.5	43.5	30.0	32.0	40.5	39.0	35.5	41.5	42.0	31.5	34.0	42.5

Meteorological Register for the Month of APRIL—*continued.*

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH, &c.													Maxim.	Minim.	Mean Temp.	Prevailing Winds.
			18	19	20	21	22	23	24	25	26	27	28	29	30				
Eastport, (Me.) -	44° 44′	67° 04′	38.5	39.5	40.0	38.0	37.5	36.5	37.5	38.5	41.5	38.5	44.5	47.5	50.5	61	21	37.17	s.
Portland, (Me.) -	43 38	70 18	42.0	40.5	42.0	41.5	42.5	43.5	49.5	46.5	50.0	47.5	49.5	51.5	55.0	63	25	42.18	SE. SW.
Ft. Constit'n, (N.H.)	43 04	70 49	39.5	42.5	43.0	42.5	42.0	41.5	52.0	52.5	55.0	51.0	48.0	57.0	54.5	60	28	44.43	S. E.
Newport, (R. I.)	41 30	71 18	44.0	55.5	40.5	45.5	46.0	47.5	49.0	57.5	57.0	60.0	55.0	58.5	57.5	70	31	47.33	S. W.
Philadelphia, (Pa.)	39 57	75 09	47.0	45.0	43.0	47.0	42.0	45.0	57.0	71.0	71.0	69.0	66.0	63.0	65.0	79	30	52.23	NW. SW.
Annapolis, (Md.)	38 58	76 27	51.5	46.5	45.5	49.5	46.5	46.0	61.5	71.0	68.5	65.0	60.5	64.5	64.0	88	32	54.90	S.
Norfolk, (Va.) -	36 58	76 16	61.5	54.0	48.5	51.5	54.0	50.0	66.5	74.0	73.5	72.0	66.0	66.5	68.5	84	42	62.01	S. W.
Pensacola, (Fl.) -	30 24	87 14	75.5	72.5	63.5	64.5	67.0	70.0	73.5	74.5	73.0	68.0	72.0	73.0	73.0	77	52	70.16	S. W.
Ft. St. Philip, (La.)	29 29	89 21	76.5	71.5	62.0	65.0	67.0	70.5	72.5	74.5	68.0	66.0	69.5	70.5	72.0	81	50	70.35	S.
Baton Rouge, (La.)	30 26	91 18	73.5	57.0	58.5	59.0	65.0	67.5	68.5	73.5	61.5	65.5	67.0	68.5	73.0	86	48	67.99	S.
Council Bluffs -	41 25	95 43	41.5	54.5	55.0	54.5	68.5	73.5	55.5	56.5	61.0	63.5	71.5	74.0	70.0	89	22	49.31	N. W.
Fort St. Anthony	44 53	93 08	40.0	49.5	49.5	41.5	51.5	66.5	44.5	49.5	56.0	62.5	67.5	72.5	58.5	83	22	43.75	W.
Prairie du Chien	43 03	90 52	38.0	42.5	48.5	49.5	42.0	62.5	67.5	48.0	47.5	48.5	58.5	70.5	70.5	81	20	43.99	N. W.
Green Bay - -	44 40	87 00	42.5	44.0	53.5	33.5	43.5	58.0	44.0	46.5	44.0	45.5	55.5	60.5	67.5	75	17	41.18	N. E.
Mackinac, (Mich.)	45 51	85 05	32.5	35.5	43.5	33.5	29.5	37.5	38.0	35.5	38.5	45.5	46.5	40.5	56.0	65	20	34.03	S.
Detroit, (Mich.) -	42 19	83 00	42.0	47.5	48.0	51.5	47.5	53.5	73.5	66.0	58.0	56.0	57.5	62.5	70.0	79	30	49.11	S.
Fort Niagara, (N. Y.)	43 15	79 05	34.0	34.5	37.0	47.0	35.0	41.0	52.0	60.0	47.0	45.5	55.5	50.0	70.0	84	26	40.45	S.

Meteorological Register for the Month of May, 1822.

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH AND MEAN DAILY TEMPERATURE.																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Eastport, (Me.) -	44° 44′	67° 04′	50.0	57.5	46.5	45.0	45.5	40.5	47.5	52.5	47.0	46.5	44.0	43.5	51.5	49.0	50.0	48.0	47.0	46.5
Portland, (Me.) -	43 38	70 18	54.5	63.5	52.5	49.5	49.0	50.0	53.5	57.5	51.5	56.5	49.5	55.5	56.5	59.0	63.5	53.0	53.5	57.5
Ft. Constit'n, (N. H.)	43 04	70 49	59.5	61.0	59.0	51.0	50.0	46.5	54.5	58.0	56.0	59.5	49.5	53.0	61.5	59.5	59.0	59.0	55.5	61.0
Newport, (R. I.)	41 30	71 18	59.0	59.0	60.5	55.5	47.0	50.5	55.5	56.5	56.5	54.0	53.5	56.0	58.5	61.5	63.0	57.5	58.5	61.5
Philadelphia, (Pa.)	39 57	75 09	70.0	75.0	68.0	59.0	54.0	54.0	55.0	54.0	56.0	58.0	63.0	68.0	63.0	67.0	69.0	67.0	61.0	65.0
Annapolis, (Md.)	38 58	76 27	72.5	72.5	69.5	59.0	56.0	55.5	53.5	58.0	61.5	59.5	61.5	62.5	64.5	66.5	68.5	71.5	62.0	71.5
Norfolk, (Va.) -	36 58	76 16	74.0	77.5	73.5	67.5	62.0	59.5	68.5	68.5	58.5	61.5	65.5	62.5	66.5	71.5	74.0	72.5	73.5	75.5
Pensacola, (Fl.) -	30 24	87 14	75.0	75.5	76.5	76.5	78.0	71.0	73.0	74.5	77.5	77.5	76.5	75.5	78.0	78.5	78.5	78.0	80.0	79.5
Ft. St. Philip, (La.)	29 29	89 21	71.0	72.5	73.5	74.0	76.0	72.0	71.5	73.5	75.5	77.0	77.0	76.5	77.5	77.0	77.0	76.5	76.0	78.0
Baton Rouge, (La.)	30 26	91 18	72.5	76.0	72.0	75.0	76.0	71.5	74.5	76.5	78.0	69.5	73.5	76.0	75.0	77.5	77.5	76.0	75.5	70.5
Council Bluffs -	41 25	95 43	72.5	65.5	61.5	59.5	68.5	76.5	58.5	60.5	64.0	68.0	65.0	63.5	73.0	65.5	58.5	63.5	68.5	68.5
Fort St. Anthony	44 53	93 08	60.0	58.0	54.5	56.5	67.0	68.0	56.5	58.5	61.0	65.5	68.0	62.5	71.5	66.5	59.0	62.5	58.0	60.5
Prairie du Chien	43 03	90 52	61.5	57.0	54.5	53.5	49.5	59.5	53.0	57.5	55.5	59.5	65.5	62.5	65.0	65.0	65 5	52.5	63.5	63.5
Green Bay - -	44 40	87 00	61.0	58.0	49.0	54.5	51.5	52.5	58.0	49.5	55.5	66.5	65.0	66.0	69.0	57.5	53.5	52.0	55.5	62.0
Mackinac, (Mich.)	45 51	85 05	48.5	46.0	42.0	39.0	43.5	45.0	46.5	43.0	43.5	51.5	47.5	48.0	50.5	52.5	48.5	44.5	48.0	54.5
Detroit, (Mich.) -	42 19	83 00	73.5	65.5	54.0	52.0	54.5	60.0	61.5	57.5	59.0	64.0	67.0	70.0	70.0	67.0	66.0	60.5	67.5	68.5
Fort Niagara, (N. Y.)	43 15	79 05	62.0	62.5	45.0	45.0	44.5	48.0	53.0	52.0	52.0	50 5	51.5	54.0	64.0	55.0	59.5	48.5	49.0	60.0

Meteorological Register for the Month of MAY—*continued.*

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH, &c.													Maxim.	Minim.	Mean Temp.	Prevailing Winds.
			19	20	21	22	23	24	25	26	27	28	29	30	31				
Eastport, (Me.) -	44° 44′	67° 04′	51.5	49.0	45.5	51.5	59.0	58.0	52.5	52.5	59.5	64.0	63.5	58.5	59.5	74	36	50.49	NW. S.
Portland, (Me.) -	43 38	70 18	59.5	60.5	55.5	65.5	69.5	60.0	50.0	55.5	61.5	76.0	66.5	63.5	60.5	88	42	57.40	S. W.
Ft. Constit'n, (N. H.)	43 04	70 49	59.0	58.5	56.0	61.0	68.0	57.5	53.0	54.5	58.0	72.0	66.5	61.5	61.5	84	42	57.85	S.
Newport, (R. I.)	41 30	71 18	62.0	59.5	63.5	63.0	65.5	62.5	60.0	59.0	65.0	66.5	71.5	65.5	70.0	77	44	59.83	S. W.
Philadelphia, (Pa.)	39 57	75 09	68.0	68.0	70.0	74.0	72.0	67.0	62.0	61.0	68.0	72.0	74.0	72.0	72.0	80	48	65.35	SW. NW.
Annapolis, (Md.)	38 58	76 27	75.5	70.5	73.0	76.0	71.0	68.5	63.5	62.5	68.0	73.5	76.5	73.0	73.5	88	48	67.09	S.
Norfolk, (Va.) -	36 58	76 16	76.0	75.5	75.5	79.0	78.0	74.0	67.5	68.0	70.5	74.5	79.0	78.0	77.0	84	54	71.00	S. W.
Pensacola, (Fl.) -	30 24	87 14	80.5	76.5	81.0	82.0	79.5	80.0	80.5	79.5	77.5	77.5	79.0	83.0	83.5	87	65	77.78	S. W.
Ft. St. Philip, (La.)	29 29	89 21	72.0	77.5	80.5	81.0	80.5	80.0	80.5	81.5	81.0	79.5	81.5	82.5	83.5	88	66	77.24	S. E.
Baton Rouge, (La.)	30 26	91 18	69.5	80.0	80.5	85.5	83.5	82.0	83.0	84.5	78.5	87.0	85.0	83.0	87.5	99	64	78.16	S.
Council Bluffs -	41 25	95 43	68.0	65.0	66.5	54.5	48.5	41.5	51.0	59.0	72.0	67.5	68.0	67.0	68.0	94	40	63.92	N.
Fort St. Anthony	44 53	93 08	68.5	66.5	66.5	50.5	51.5	55.5	51.0	57.5	73.0	59.5	66.0	59.5	64.5	84	43	61.28	NE. SW.
Prairie du Chien	43 03	90 52	65.0	63.5	68.5	54.0	46.5	47.5	54.5	57.5	69.5	68.5	72.5	72.0	72.5	84	39	60.49	S. E.
Green Bay - -	44 40	87 00	54.5	59.0	64.5	54.5	43.5	45.5	60.0	64.5	72.0	65.0	71.5	65.5	61.0	86	38	61.15	S. W.
Mackinac, (Mich.)	45 51	85 05	48.5	44.5	57.0	56.5	39.5	44.5	44.5	50.5	54.5	59.0	52.5	62.5	53.0	69	34	48.67	W.
Detroit, (Mich.) -	42 19	83 00	64.5	65.5	75.5	71.0	62.5	54.0	61.5	73.5	76.0	78.5	75.5	81.5	83.5	90	52	66.54	S.
Fort Niagara, (N. Y.)	43 15	79 05	58.5	56.5	66.0	68.0	53.5	45.0	50.5	55.5	73.5	70.5	65.5	70.5	73.0	80	32	55.77	N.

Meteorological Register for the Month of JUNE, 1822.

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH AND MEAN DAILY TEMPERATURE.															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Eastport, (Me.) -	44° 44′	67° 04′	48.0	54.5	65.5	55.5	56.5	55.5	55.5	54.5	54.0	61.5	62.5	56.5	54.0	53.0	57.0	59.5	60.0
Portland, (Me.) -	43 38	70 18	65.0	61.5	64.5	58.5	57.5	59.5	60.0	66.5	66.5	69.5	64.0	66.5	60.5	62.5	65.5	74.5	61.5
Ft. Constit'n, (N. H.)	43 04	70 49	64.0	66.5	65.5	63.0	59.5	58.0	60.0	64.5	68.0	72.5	66.5	66.5	63.5	62.5	67.5	74.0	64.5
Newport, (R. I.)	41 30	71 18	72.0	70.5	70.5	64.5	59.5	59.0	63.0	67.0	69.5	72.5	71.0	71.5	63.5	63.0	64.0	71.0	66.0
Philadelphia, (Pa.)	39 57	75 09	76.0	78.0	74.0	74.0	67.0	65.0	66.0	74.0	73.0	73.0	75.0	73.0	67.0	66.0	67.0	74.0	70.0
Annapolis, (Md.)	38 58	76 27	79.5	78.5	80.0	79.5	66.5	63.5	69.5	77.5	71.5	73.0	74.0	73.0	70.5	71.5	69.5	78.0	71.5
Norfolk, (Va.) -	36 58	76 16	81.0	81.0	81.5	81.0	73.0	68.0	69.0	77.5	79.0	78.5	80.0	81.5	72.0	69.5	70.5	76.5	79.5
Pensacola, (Fl.) -	30 24	87 14	84.5	84.5	84.5	85.5	85.5	84.5	83.0	85.0	86.0	87.0	86.5	88.0	89.0	82.5	84.5	85.5	85.5
Ft. St. Philip, (La.)	29 29	89 21	83.5	82.5	81.5	81.5	83.5	83.5	82.5	84.0	84.5	84.5	85.5	86.5	87.0	82.5	83.5	84.0	84.5
Baton Rouge, (La.)	30 26	91 18	86.5	82.5	82.5	79.5	81.5	80.5	81.0	82.5	83.5	84.5	86.0	86.5	85.5	83.0	84.0	84.0	85.5
Council Bluffs -	41 25	95 43	66.5	71.0	79.5	71.0	74.0	80.5	84.5	79.5	79.5	76.0	78.5	79.5	84.5	71.5	71.5	78.5	84.0
Fort St. Anthony	44 53	93 08	61.5	63.5	64.5	56.5	62.0	74.0	74.0	73.5	77.5	72.5	74.0	79.5	71.0	70.5	69.0	72.5	76.5
Prairie du Chien	43 03	90 52	62.5	57.5	65.5	54.5	61.5	69.5	73.5	70.0	72.0	73.5	72.0	73.0	77.5	78.5	68.5	70.5	77.0
Green Bay - -	44 40	87 00	76.0	58.5	53.5	54.0	55.0	66.5	70.5	63.5	67.0	74.0	68.0	63.0	66.0	80.0	66.0	68.0	67.5
Mackinac, (Mich.)	45 51	85 05	53.5	50.5	45.5	51.0	50.0	56.0	59.0	59.0	64.5	62.5	55.5	57.0	49.5	72.5	57.5	59.0	58.5
Detroit, (Mich.) -	42 19	83 00	81.5	74.5	70.5	67.5	63.5	70.5	78.5	72.5	72.0	74.0	77.5	66.5	71.5	83.0	82.5	73.0	72.0
Fort Niagara, (N. Y.)	43 15	79 05	69.5	70.0	55.5	54.0	62.5	73.0	62.0	62.0	68.5	70.5	71.5	65.5	58.0	73.5	82.5	66.5	69.5

Meteorological Register for the Month of JUNE—*continued.*

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH, &c.													Maxim.	Minim.	Mean Temp.	Prevailing Winds.
			18	19	20	21	22	23	24	25	26	27	28	29	30				
Eastport, (Me.) -	44° 44′	67° 04′	59.5	56.0	54.0	58.0	60.0	64.0	55.5	59.5	53.5	64.0	63.5	66.0	61.5	78	46	57.99	s.
Portland, (Me.) -	43 38	70 18	57.5	64.0	63.0	66.5	69.5	68.0	60.5	59.0	66.5	70.0	71.5	72.5	73.0	87	51	64.88	s.
Ft. Constit'n, (N. H.)	43 04	70 49	60.5	53.5	60.0	70.0	68.5	69.5	63.5	62 5	66.5	70.0	69 5	69 5	65.5	86	50	65.12	SE. SW.
Newport, (R. I.)	41 30	71 18	62.5	64.5	66.0	67.5	69.0	69.5	68.0	68.5	69.0	70.0	70.5	72.0	72.5	81	52	68.67	s. w.
Philadelphia, (Pa.)	39 57	75 09	66.0	67.0	66.0	69.0	71.0	74.0	75.0	72.0	72.0	70.0	71.0	75.0	76.0	80	62	71.20	NW. SW.
Annapolis, (Md.)	38 58	76 27	67.5	67.5	71.5	69.5	70.5	74.5	77.0	76.5	74.5	71.5	75.5	79.0	79.0	90	60	73.01	s.
Norfolk, (Va.) -	36 58	76 16	78.5	72.0	71.5	76.0	77.0	75.0	79.5	81.5	81.5	77.5	76.5	77.5	78.5	85	67	76.73	s.
Pensacola, (Fl.) -	30 24	87 14	86.5	85.5	86.0	84.5	85.5	85.5	85.5	85.5	85.5	84.5	82.5	84.5	85.5	93	79	84.04	s. w.
Ft. St. Philip, (La.)	29 29	89 21	84.5	84.5	84.0	85.5	85.0	85.5	84.5	86.0	86.0	86.5	83.5	84.0	85.5	92	50	84.31	s. w.
Baton Rouge, (La.)	30 26	91 18	82.5	82.5	88.0	85.5	85.5	87.0	83.5	85.0	85.5	85.5	84.5	86.0	87.5	97	78	84.80	s. w.
Council Bluffs -	41 25	95 43	82.5	78.0	64.5	68.5	64.0	65.0	69.5	71.5	71.5	74.5	76.5	86.0	72.5	100	59	74.21	N.
Fort St. Anthony	44 53	93 08	72.0	72.5	68.5	64.0	65.5	63.5	62.5	62.5	69.0	72.5	74.0	78.5	81.5	89	54	70.19	N. W.
Prairie du Chien	43 03	90 52	68.0	70.5	...	...	...	...	...	...	...	...	...	...	...	89	50	69.25	NW. SE.
Green Bay - -	44 40	87 00	62.5	64.5	69.0	63.5	67.5	60.5	65.5	67.5	62.5	67.5	73.5	77.0	77.5	92	48	66.48	s. w.
Mackinac, (Mich.)	45 51	85 05	62.5	54.5	55.5	56.5	60.5	53.0	63.5	58.0	58.5	63.0	66.0	68.5	67.0	83	42	58.35	W.
Detroit, (Mich.) -	42 19	83 00	66.5	67.0	71.5	72.5	77.5	76.5	72.5	72.5	73.5	74.5	75.5	75.5	82.5	90	62	73.48	s.
Fort Niagara, (N. Y.)	43 15	79 05	61.5	60.5	63.5	67.0	67.0	67.0	65.0	68.5	65.5	66.5	71.5	74.5	78.5	90	50	66.63	s.

Meteorological Register for the Month of JULY, 1822.

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH AND MEAN DAILY TEMPERATURE.																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Eastport, (Me.) .	44° 44′	67° 04′	65.5	67.5	56.5	66.5	67.5	61.5	67.0	54.5	61.5	62.5	58.0	59.5	68.0	57.5	65.0	66.5	69.5	72.5
Portland, (Me.) -	43 38	70 18	81.5	67.5	62.0	70.5	72.5	72.5	80.5	57.5	64.5	70.5	66.0	67.5	77.0	67.5	70.5	72.5	71.5	73.5
Ft. Constit'n, (N.H.)	43 04	70 49	77.5	68.5	64.5	71.5	71.5	72.5	74.0	65.0	69.5	67.5	66.5	67.5	73.0	72.0	72.0	70.5	71.5	73.5
Newport, (R. I.)	41 30	71 18	72.5	74.0	72.5	76.0	76.5	76.0	78.5	77.0	72.5	72.5	74.5	76.5	76.0	75.0	75.5	74.0	73.5	77.5
Philadelphia, (Pa.)	39 57	75 09	78.0	78.0	77.0	79.0	77.0	79.0	78.0	81.0	75.0	75.0	78.0	77.0	74.0	76.0	76.0	77.0	72.0	77.0
Annapolis, (Md.)	38 58	76 27	81.5	81.5	81.0	78.0	79.5	83.5	85.0	84.0	77.0	82.5	82.5	80.5	80.0	79.5	78.5	77.5	77.0	78.0
Norfolk, (Va.) -	36 58	76 16	81.0	81.0	82.0	82.0	80.0	80.5	83.0	83.0	81.5	81.5	81.0	82.5	78.0	79.0	79.0	79.0	79.0	78.5
Pensacola, (Fl.) -	30 24	87 14	85.5	82.0	79.5	80.5	82.0	81.5	80.5	77.0	77.5	80.5	79.5	82.5	83.0	82.0	79.0	76.0	82.5	83.0
Ft. St. Philip, (La.)	29 29	89 21	85.5	84.0	81.0	79.0	80.5	83.5	82.0	80.5	79.0	77.0	80.5	81.5	82.5	78.5	80.5	79.0	75.5	81.5
Baton Rouge, (La.)	30 26	91 18	85.5	84.5	83.0	82.5	84.5	82.5	83.5	84.0	81.5	79.5	78.0	77.5	77.5	78.5	75.5	77.0	75.5	75.0
Council Bluffs -	41 25	95 43	79.5	83.5	81.5	82.5	77.5	79.5	75.5	78.5	80.0	77.5	78.5	77.0	74.5	74.5	79.5	79.5	85.5	86.0
Fort St. Anthony	44 53	93 08	77.5	77.0	77.5	75.0	73.5	70.5	71.0	73.5	73.0	69.5	72.5	70.0	. . .	. . .	. . .	. . .	. . .	86.5
Prairie du Chien	43 03	90 52	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	69.5	71.5	74.5	72.0	68.0	67.0	68.5	73.0	78.5	82.0
Green Bay - -	44 40	87 00	76.5	79.5	77.0	74.5	80.0	75.5	67.5	71.5	69.5	63.5	71.0	71.0	70.5	65.0	66.5	70.0	77.5	80.5
Mackinac, (Mich.)	45 51	85 05	71.5	67.5	72.0	71.5	71.5	75.5	61.5	58.5	65.5	62.5	63.5	67.0	73.5	63.5	62.0	68.5	71.5	73.0
Detroit, (Mich.) -	42 19	83 00	79.0	78.5	80.5	78.0	78.5	85.0	80.5	74.5	76.0	79.0	77.5	77.5	80.5	76.0	74.5	75.5	78.5	81.0
Fort Niagara,(N. Y.)	43 15	79 05	75.5	70.5	77.0	78.5	70.5	74.5	75.5	69.5	68.5	75.5	70.0	73.5	76.5	73.0	71.5	70.5	71.5	76.5

Meteorological Register for the Month of JULY—*continued.*

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH, &c.													Maxim.	Minim.	Mean Temp.	Prevailing Winds.
			19	20	21	22	23	24	25	26	27	28	29	30	31				
Eastport, (Me.) -	44° 44′	67° 04′	67.5	67.5	61.5	57.0	63.5	61.5	61.5	60.5	59.5	58.0	60.5	68.5	67.5	84	50	62.34	s.
Portland, (Me.) -	43 38	70 18	75.5	81.5	74.0	72.0	69.5	71.5	69.5	62.5	64.5	63.5	68.5	68.5	66.5	96	56	69.95	s.
Ft. Constit'n, (N.H.)	43 04	70 49	74.5	80.0	74.0	69.5	67.5	71.0	68.5	63.0	64.5	61.5	67.5	69.5	63.5	86	60	69.00	N. W.
Newport, (R. I.)	41 30	71 18	77.5	76.0	73.5	73.5	75.5	75.5	73.5	67.0	68.5	70.5	72.0	69.5	68.5	86	62	74.02	s. w.
Philadelphia, (Pa.)	39 57	75 09	78.0	81.0	76.0	74.0	74.0	74.0	70.0	67.0	69.0	75.0	72.0	71.0	70.0	86	62	75.32	NW. W.
Annapolis, (Md.)	38 58	76 27	81.5	85.0	80.0	78.0	78.5	78.5	75.5	74.5	73.5	80.5	78.5	74.0	75 5	92	70	79.88	s.
Norfolk, (Va.) -	36 58	76 16	80.0	82.5	81.5	80.5	78.5	79.5	79.0	76.5	77.5	80.5	82.5	80.0	76.0	88	72	80.21	s. w.
Pensacola, (Fl.) -	30 24	87 14	83.0	80.5	81.5	81.5	84.5	85.5	84.5	83.5	86.5	85.5	85.0	83.0	85.0	91	73	81.87	s. w.
Fort St. Philip, (La.)	29 29	89 21	80.5	81.5	81.5	80.5	82.0	81.5	83.5	82.5	82.0	85.5	86.0	84.5	84.0	90	74	81.53	s. w.
Baton Rouge, (La.)	30 26	91 18	75.5	81.0	82.0	81.5	83.0	81.5	83.5	82.5	83.5	86.0	85.0	85.0	82.5	92	73	81.20	w.
Council Bluffs -	41 25	95 43	72.5	75.0	76.0	77.0	83.5	79.5	80.5	84.0	79.0	80.0	88.0	80.0	92.5	108	65	79.62	s. w.
Fort St. Anthony	44 53	93 08	75.5	77.0	82.0	78.5	74.0	75.5	75.5	72.0	67.5	74.5	78.5	77.0	81.0	93	60	75.47	N. W.
Prairie du Chien	43 03	90 52	78.5	73.5	74.0	77.0	74.5	71.5	76.5	80.0	76.5	70.5	72.0	73.0	80.0	94	57	73.66	N. W.
Green Bay - -	44 40	87 00	81.0	68.5	72.5	72.5	74.5	70.0	66.5	67.5	78.0	65.0	72.0	73.5	76.0	92	58	72.49	s. w.
Mackinac, (Mich.)	45 51	85 05	65.5	66.0	67.5	77.0	66.5	60.0	64.0	59.5	64.5	66.0	70.5	71.0	73.5	86	54	67.34	w.
Detroit, (Mich.) -	42 19	83 00	83.0	80.5	76.5	74.5	77.5	76.5	77.0	75.5	75.0	75.5	73.5	75.0	79.0	90	68	77.60	s.
Fort Niagara, (N. Y.)	43 15	79 05	76.5	77.5	74.0	70.0	73.0	69.5	64.0	65.0	67.5	70.5	69.5	69.5	72.5	86	60	70.42	w.

Meteorological Register for the Month of AUGUST, 1822.

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH AND MEAN DAILY TEMPERATURE.																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Eastport, (Me.) -	44° 44′	67° 04′	64.0	64.5	67.5	62.5	66.5	60.5	58.5	63.5	64.5	64.5	71.5	65 5	60.0	62.5	55.5	59.0	67.5	58.0
Portland, (Me.) -	43 38	70 18	66.5	73.0	80.0	73.0	70.5	66.5	60.5	60.5	66.5	70.5	76.0	78.0	72.0	68.5	68.5	70.0	72.5	63.5
Ft. Constit'n, (N. H.)	43 04	70 49	68.5	72.0	78.5	69.5	70.0	61.5	63.5	65.5	66.5	67.0	72.0	73.5	74.5	65.5	64.0	64 5	72.5	64.5
Newport, (R. I.)	41 30	71 18	69.0	73.0	74.0	75.0	71.0	63.5	65.5	67.5	70.5	74.5	75.0	74.0	71.5	69.5	72.5	72.5	76.5	72.0
Philadelphia, (Pa.)	39 57	75 09	69.0	73.0	76.0	80.0	71.0	66.0	64.0	65.0	67.0	71.0	71.0	74.0	78.0	76.0	74.0	72.0	78.0	76.0
Annapolis, (Md.)	38 58	76 27	74.5	80.0	84.0	82.5	75.5	72.0	71.5	71.5	73.0	75.5	76.0	78.0	81.5	79.0	84.0	78.5	78.5	80.0
Norfolk, (Va.) -	36 58	76 16	77.0	79.5	81.0	82.5	75.5	73.5	71.5	68.5	70.5	71.5	72 5	78.0	80.0	82.5	83.0	82.5	78.5	79.5
Pensacola, (Fl.) -	30 24	87 14	84.0	83.0	82.5	81.5	83.5	82.0	81.5	81.5	82.5	81.5	82.0	80.5	82.5	85.0	84.5	82 0	84 5	83.5
Ft. St. Philip, (La.)	29 29	89 21	84.5	85.5	83.0	81.5	81.5	82.0	84.5	84.5	85.5	84.0	83.5	80 5	78.5	83.0	81.5	81.0	83.5	84.5
Baton Rouge, (La.)	30 26	91 18	83.5	82.0	83.0	84.5	82.0	79.0	80.5	83.5	83.0	83.5	80 5	81.5	75.5	77.5	75.5	76.5	81.0	82.0
Council Bluffs -	41 25	95 43	91.5	85.5	71.5	69.5	70.5	71.5	81.5	78.0	82.5	83.5	87.5	79.0	69.5	73.0	77.5	79.5	81.0	81.5
Fort St. Anthony	44 53	93 08	78.5	76.0	75.0	63.5	68.0	66.5	76.5	77.0	79.5	82.0	83.5	74.0	76.5	73.5	74.5	71.5	73.5	74.0
Prairie du Chien	43 03	90 52	82.0	74.5	72.0	63.0	64.5	67.5	74.5	76.0	79.0	79.0	78.5	77.0	74.5	65.0	71.0	75.0	74.5	68.0
Green Bay - -	44 40	87 00	80 0	74.5	69.5	61.5	62.5	70.5	70.5	72.5	78.5	77.5	77.5	73.0	67.0	61.5	66.5	70 0	67.0	66.0
Mackinac, (Mich.)	45 51	85 05	68 5	67.5	68.5	60.5	57.5	66.5	65.0	69.5	75.5	74.5	71.0	68.5	65.0	62.5	66.5	66.0	67.0	67.0
Detroit, (Mich)	42 19	83 00	78.5	86.0	83.5	77.5	70.5	73.5	78.0	62.5	80.5	79.0	84.0	81.0	76.5	76.5	73.5	76.0	75.5	76 0
Fort Niagara, (N. Y.)	43 15	79 05	80.5	74.5	78.5	71.0	62.5	62.0	68.0	68.5	73.0	71.5	76.5	81.5	75.5	66.5	66.5	64.5	65.5	67.5

Meteorological Register for the Month of AUGUST—*continued.*

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH, &c.													Maxim.	Minim.	Mean Temp.	Prevailing Winds.
			19	20	21	22	23	24	25	26	27	28	29	30	31				
Eastport, (Me.) -	44° 44'	67° 04'	64.5	65.5	59.5	56.5	58.5	58.0	62.5	65.5	57.0	61.5	61.0	62.5	61.5	88	50	62.21	S.
Portland, (Me.) -	43 38	70 18	67.5	75.0	71.5	62.5	68.5	65.5	66 5	65.0	62.0	63.5	67.5	65.5	63.5	94	54	68.15	S. W.
Ft. Constit'n, (N.H.)	43 04	70 49	64.5	72.5	66.5	64.0	63.5	62.5	65.5	67.5	65.5	66.0	67.5	67.5	66.5	86	57	69.84	S.
Newport, (R. I.)	41 30	71 18	74.5	74.5	73.5	69.5	68.0	66.5	67.5	68.0	68.5	66.5	71.5	66.5	66.5	85	58	70.80	S. W.
Philadelphia, (Pa.)	39 57	75 09	77.0	80.0	74.0	71.0	69.0	69.0	70.0	68.0	69.0	69.0	76.0	66.0	65.0	87	56	71.74	NW. W.
Annapolis, (Md.)	38 58	76 27	80.0	82.0	80.5	79.5	77.5	75.0	74.5	75.5	73.0	73.0	76.5	75.5	73.0	89	68	77.22	S. E.
Norfolk, (Va.) -	36 58	76 16	78.5	82.5	80.5	80.0	79.5	78.5	75.5	72.5	72.0	74.5	74.5	75.5	75.0	87	68	77.09	S. W.
Pensacola, (Fl.) -	30 24	87 14	85.0	79.5	82.5	84.0	81.5	83.5	82.5	84.0	83.0	83.5	84.0	83.0	82.0	89	75	82.22	S. W.
Ft. St. Philip, (La.)	29 29	89 21	84.0	81.5	80.5	82.5	84.0	84.0	84.0	83.5	84.0	83.5	82.5	82.0	81.5	89	78	82.83	E.
Baton Rouge, (La.)	30 26	91 18	81.5	82.0	80.5	74.5	80.5	82.5	82.0	82.5	83.5	80.0	74.5	76.0	81.5	90	73	81.07	S.
Council Bluffs -	41 25	95 43	78.0	78.5	75.5	72.5	76.5	78.5	77.5	75.5	72.0	75.5	76.5	70.5	77.5	104	61	77.27	S. W.
Fort St. Anthony	44 53	93 08	71.5	68.0	63.5	69.5	71.0	79.0	77.5	75.0	73.0	64.5	70.5	68.5	68.5	92	53	72.77	S. & W.
Prairie du Chien	43 03	90 52	71.0	67.5	63.0	66.0	69.0	73.0	76.0	70.5	71.0	66.5	64.5	69.0	68.5	92	51	72.37	N. W.
Green Bay - -	44 40	87 00	66.5	70.0	64.5	61.5	66.0	73.5	76.5	75.5	72.5	67.0	60.5	67.0	71.5	89	51	69.59	S. W.
Mackinac, (Mich.)	45 51	85 05	66.5	65.0	61.5	64.5	67.5	71.5	77.5	72.5	68.5	59.0	63.5	65.5	67.0	84	52	66.64	W.
Detroit, (Mich.) -	42 19	83 00	80.5	77.5	77.5	70.0	74.5	75.5	76.5	78.5	77.5	73.0	74.0	72.5	74.5	91	64	77.17	S.
Fort Niagara, (N. Y.)	43 15	79 05	73.0	72.0	70.5	66.5	68.5	68.5	70.5	73.5	73.5	73.5	61.5	66.5	70.5	88	56	68.90	N.

Meteorological Register for the Month of SEPTEMBER, 1822.

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH AND MEAN DAILY TEMPERATURE.															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Eastport, (Me.) -	44° 44′	67° 04′	61.0	62.0	66.5	64.5	64.5	58.5	60.5	61.5	58.5	64.0	63.0	60.5	63.5	57.5	62.0	61.5	48.5
Portland, (Me.) -	43 38	70 18	67.5	68.5	72.5	69.5	67.0	61.5	63.5	67.5	68.0	68.5	70.5	65.5	72.0	66.0	68.0	65.0	52.5
Ft. Constit'n, (N. H.)	43 04	70 49	66.5	68.0	69.5	68.5	61.0	62.0	62.5	68.0	66.5	66.5	71.5	67.5	71.0	66.5	68.5	66.5	56.5
Newport, (R. I.)	41 30	71 18	72.5	76.0	76.5	71.5	68.5	67.5	71.0	70.5	72.5	76.0	75.5	74.5	76.5	72.5	74.0	69.0	59.0
Philadelphia, (Pa.)	39 57	75 09	...	...	...	...	...	...	...	74.0	73.0	76.0	76.0	...	78.0	...	78.0	70.0	53.0
Annapolis, (Md.)	38 58	76 27	78.5	78.5	74.5	69.0	69.5	72.0	73.5	74.5	76.5	75.5	78.5	81.5	81.5	79.5	80.5	75.0	65.0
Norfolk, (Va.) -	36 58	76 16	78.0	78.0	79.5	73.5	73.5	73.5	72.5	75.0	76.0	75.5	74.5	79.5	80.5	81.5	79.5	78.5	67.5
Pensacola, (Fl.) -	30 24	87 14	83.5	85.5	76.5	75.5	77.5	77.5	80.5	79.5	78.0	75.5	77.5	80.5	81.5	81.5	82.5	83.0	85.5
Ft. St. Philip, (La.)	29 29	89 21	84.5	84.5	78.5	77.5	74.5	76.0	80.5	80.5	80.5	81.5	80.5	82.0	82.5	83.5	83.5	83.0	85.5
Baton Rouge, (La.)	30 26	91 18	82 5	75.5	73.5	72.5	75.5	74.5	74.0	76.0	77.5	79.5	79.5	77.5	78.5	77.5	78.0	75.5	82.0
Council Bluffs -	41 25	95 43	59.5	57.5	56.5	60.0	68.0	76.5	75.5	70.0	70.5	81.0	71.5	75.0	75.5	69.5	68.0	61.5	62.5
Fort St. Anthony	44 53	93 08	62.5	50.0	50.5	50.5	58.5	69.0	66.5	61.5	65.0	64.5	61.0	71.5	71.5	70.5	62.5	51.5	54.0
Prairie du Chien	43 03	90 52	65.0	55.5	48.0	49.5	55.0	66.5	61.5	67.5	67.5	65.5	61.5	68.0	70.5	71.5	67.5	63.0	58.0
Green Bay - -	44 40	87 00	64.5	48.0	46.5	49.0	54.0	64.0	61.5	66.5	63.5	66.0	59.5	66.5	64.5	72.0	64.5	54.0	52.0
Mackinac, (Mich.)	45 51	85 05	68.0	47.5	45.5	47.0	56.5	61.5	61.5	60.5	63.5	63.0	59.5	64.0	64.0	69.5	59.5	48.0	52.0
Detroit, (Mich.)	42 19	83 00	75.5	70.5	59.5	59.0	62.5	64.5	73.0	75.0	76.5	76.0	71.5	75.0	74.5	77.5	78.0	67.5	59.5
Fort Niagara, (N. Y.)	43 15	79 05	75.5	70.5	60.5	54.5	57.5	61.5	70.0	71.5	73.0	77.5	72.5	71.5	70.5	64.0	73.5	62.0	57.5

Meteorological Register for the Month of SEPTEMBER—*continued.*

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH, &c.													Maxim.	Minim.	Mean Temp.	Prevailing Winds.
			18	19	20	21	22	23	24	25	26	27	28	29	30				
Eastport, (Me.) -	44° 44′	67° 04′	47.5	56.0	55.5	61.0	49.5	48.5	53.5	54.5	57.5	64.0	66.5	63.5	61.5	78	36	59.14	S.
Portland, (Me.) -	43 38	70 18	54.5	60.0	65.5	60.5	54.0	53.5	54.5	54.5	64.0	67.5	70.0	66.0	69.5	86	40	64.16	S.
Ft. Constit'n, (N.H.)	43 04	70 49	56.0	59.0	60.0	61.5	54.0	47.5	56.5	62.0	64.0	62.5	62.5	62.5	66.0	80	41	62.12	S. E.
Newport, (R. I.)	41 30	71 18	56.5	61.5	66.5	64.0	56.5	55.5	60.5	63.5	66.5	69.5	74.5	72.0	70.5	82	50	68.58	S. W.
Philadelphia, (Pa.)	39 57	75 09	58.0	62.0	64.0	65.0	55.0	57.0	55.0	61.0	71.0	71.0	76.0	71.0	66.0	89	47	67.14	NW.SW.
Annapolis, (Md.)	38 58	76 27	64.5	69.0	66.5	67.5	64.5	64.0	64.5	66.5	70.5	74.5	74.5	74.5	68.5	86	60	72.42	SE. & S.
Norfolk, (Va.) -	36 58	76 16	66.5	72.5	69.0	68.5	67.5	66.5	69.0	73.0	74.5	77.0	76.5	76.5	71.0	84	63	74.09	N. E.
Pensacola, (Fl.) -	30 24	87 14	82.5	80.0	71.0	74.5	76.5	78.5	75.5	74.5	76.0	78.5	73.5	69.0	68.5	94	61	77.92	S. E.
Fort St. Philip, (La.)	29 29	89 21	84.5	78.5	78.0	79.5	78.5	80.5	79.0	77.5	76.5	78.0	75.0	70.5	70.5	91	66	79.48	S. E.
Baton Rouge, (La.)	30 26	91 18	80.5	77.5	76.0	76.5	77.5	76.5	72.0	73.5	75.5	69·5	69.5	65 5	71.5	91	58	76.15	E.
Council Bluffs -	41 25	95 43	77.5	69.5	69.0	65.0	65.0	75.5	77.0	77.5	62.5	59.0	62.5	61.5	57.5	93	48	67.81	S. W.
Fort St. Anthony	44 53	93 08	62.5	59.5	60.0	52.5	57.5	68.5	77.0	66.5	60.0	56.0	59.5	55.0	45.5	88	35	60.58	S. SW.
Prairie du Chien	43 03	90 52	57.5	59.0	59.5	53.5	53.5	61.5	65.0	66.0	64.0	58.5	58.5	59.5	48.0	86	37	61.16	N. W.
Green Bay - -	44 40	87 00	56.0	59.5	59.5	48.5	49.5	57.0	65.5	68.0	64.0	53.5	53.0	58.5	48.5	80	39	59.18	S. W.
Mackinac, (Mich.)	45 51	85 05	56.5	57.5	59.5	45.5	50.5	57.5	61.5	62.5	61.5	51.5	52.5	59.5	44.0	76	40	56.82	W.
Detroit, (Mich.) -	42 19	83 00	61.5	68.5	70.0	62.0	60.5	61.5	63.0	66.5	39.5	74.5	65.0	61.5	59.5	89	51	68.33	S.
Fort Niagara, (N. Y.)	43 15	79 05	58.0	60.5	64.5	59.0	51.5	59.0	58.0	60.0	69.0	74.5	64.5	58.0	57.0	82	43	67.43	S.

Meteorological Register for the Month of October, 1822.

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH AND MEAN DAILY TEMPERATURE.																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Eastport, (Me.) -	44° 44′	67° 04′	51.5	47.0	47.5	47.0	51.0	51.5	54.0	53.5	53.0	56.5	55.5	54.5	54.5	46.5	43.0	47.5	50.0	53.5
Portland, (Me.) -	43 38	70 18	53.5	50.0	48.5	48.0	49.5	54.0	56.0	59.5	56.0	60.5	60.0	56.5	51.5	45.0	43.5	49.0	54.5	55.5
Ft. Constit'n, (N. H.)	43 04	70 49	54.0	56.5	48.5	48.5	53.5	55.0	59.5	61.5	57.5	63.5	64.0	59.5	58.0	50.5	46.5	46.0	58.0	58.0
Newport, (R. I.)	41 30	71 18	56.5	54.5	53.0	55.5	58.0	61.5	58.5	65.5	62.0	68.0	67.5	65.5	62.5	54.0	49.5	60.5	60.0	64.5
Philadelphia, (Pa.)	39 57	75 09	62.0	56.0	53.0	55.0	50.0	62.0	66.0	57.0	65.0	67.0	71.0	65.0	63.0	53.0	50.0	57.0	59.0	66.0
Annapolis, (Md.)	38 58	76 27	62.5	56.5	58.5	60.0	63.5	66.0	71.5	70.0	70.0	70.0	72.5	64.0	63.5	56.0	55.5	63.5	67.5	68.5
Norfolk, (Va.) -	36 58	76 16	70.0	67.5	67.5	67.0	64.5	66.5	72.0	77.5	73.0	73.0	75.5	66.5	69.0	67.5	61.0	62.5	66.0	71.5
Pensacola, (Fl.) -	30 24	87 14	69.5	75.5	76.5	72.5	72.5	77.0	73.5	76.5	75.5	60.5	60.5	64.5	70.5	73.5	73.5	75.5	75.5	74.5
Ft. St. Philip, (La.)	29 29	89 21	77.0	75.0	75.0	77.0	77.5	77.5	76.5	77.0	71.5	60.5	66.0	72.5	71.5	73 0	75.5	76.0	78.5	80.5
Baton Rouge, (La.)	30 26	91 18	70.0	65.5	73.0	77.0	73.5	75.5	76.5	75.5	75.0	62.5	53.5	63.5	66.0	69.5	69.5	77.0	75.5	76.5
Council Bluffs -	41 25	95 43	59.0	57.5	60.0	66.0	67.5	59.0	50.5	43.5	47.0	57.5	65.0	46.0	44.0	46.5	54.5	49.5	62.5	57.0
Fort St. Anthony	44 53	93 08	52.0	51.5	56.5	59.5	64.5	43.5	43.5	45.5	44.0	53.5	58.5	39.0	39.5	33.5	46.5	43.5	55.0	44.0
Prairie du Chien	43 03	90 52	48.0	47.5	58.0	67.0	73.5	52.0	42.0	43.5	43 5	47.5	52.0	48.5	39.5	42.5	48.5	51.5	54.5	53.5
Green Bay - -	44 40	87 00	48.0	47.0	55.5	61.5	65.5	60.5	41.5	45.5	47.5	51.5	49.5	48.0	40.0	39.5	40 5	47.5	52.5	50.5
Mackinac, (Mich.)	45 51	85 05	44.5	47.0	51.5	56.5	56.5	59.5	50.5	50.0	45.5	51.0	51.5	49.5	39.0	36.5	47.5	47.5	55.0	49.5
Detroit, (Mich.) -	42 19	83 00	54.5	54.5	57.5	60.0	66.0	71.0	57.5	61.0	66.0	58.0	61.5	63.5	54.5	52.0	48.5	53.5	53.5	63.5
Fort Niagara, (N. Y.)	43 15	79 05	48.5	42.0	46.5	53.5	59.5	68.5	52.5	54.0	51.5	53.0	57.5	58.5	51.5	46.0	43.0	50.5	54.5	57.5

Meteorological Register for the Month of OCTOBER—*continued.*

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH, &c.													Maxim.	Minim.	Mean Temp.	Prevailing Winds.
			19	20	21	22	23	24	25	26	27	28	29	30	31				
Eastport, (Me.) -	44° 44′	67° 04′	56.0	51.5	46.5	43.5	36.5	38.5	35.5	31.5	33.0	35.5	43.5	35.5	42.5	66	24	46.68	N. W.
Portland, (Me.) -	43 38	70 18	58.0	51.5	48.5	47.5	39.5	39.5	39.5	35.5	38.0	39.5	38.5	41.5	45.0	68	30	48.78	NW. S.
Ft. Constit'n, (N. H.)	43 04	70 49	62.0	59.0	53.5	56.0	43.5	40.5	42.0	38.5	40.5	44.0	43.5	42.5	48.0	68	34	52.09	N. W.
Newport, (R. I.)	41 30	71 18	67.5	64.5	66.5	54.5	46.5	47.5	44.5	40.5	44.5	50.0	49.5	48.0	53.5	73	36	56.83	S. W.
Philadelphia, (Pa.)	39 57	75 09	72.0	73.0	67.0	53.0	48.0	50.0	46.0	40.0	49.0	50.0	47.0	45.0	53.0	76	36	57.10	NW. SW.
Annapolis, (Md.)	38 58	76 27	71.5	76.0	75.5	54.0	51.5	64.0	48.5	47.5	51.5	59.5	52.5	48.5	55.5	80	44	61.55	N. W.
Norfolk, (Va.) -	36 58	76 16	73.0	74.5	74.5	62.5	59.5	60.5	56.0	52.5	61.5	62.5	54.0	51.5	58.0	82	46	65.44	S. W.
Pensacola, (Fl.) -	30 24	87 14	80.5	81.5	68.0	64.0	68.0	70.5	68.5	70.0	70.0	58.0	56.5	56.0	57.0	88	46	69.87	N.
Ft. St. Philip, (La.)	29 29	89 21	79.5	66.5	63.5	69.5	67.5	66.5	73.0	73.5	68.5	56.5	60.5	64.0	66.5	83	52	71.43	N. E.
Baton Rouge, (La.)	30 26	91 18	74.5	74.5	57.5	60.0	64.5	62.0	58.5	62.5	64.5	54.5	57.5	62.0	65.5	85	46	67.00	N.
Council Bluffs -	41 25	95 43	32.5	36.0	37.5	29.0	31.5	32.5	40.0	42.0	39.5	39.0	44.5	45.5	37.5	83	22	49.13	S. W.
Fort St. Anthony	44 53	93 08	34.5	36.5	29.5	22.5	25.5	26.0	34.5	42.5	43.5	37.5	37.5	39.0	27.5	80	15	42.56	N. NW.
Prairie du Chien	43 03	90 52	41.5	33.0	34.5	27.5	25.5	24.0	30.5	42.5	36.5	33.0	38.0	43.5	32.5	81	12	44.37	N. W.
Green Bay - -	44 40	87 00	40.5	33.5	33.5	31.5	31.0	27.5	29.5	42.0	40.5	32.5	37.5	40.5	34.0	77	17	43.47	S. W.
Mackinac, (Mich.)	45 51	85 05	37.5	32.5	35.0	33.5	33.0	34.0	34.5	39.0	40.5	34.5	32.0	39.5	34.0	64	30	43.47	W.
Detroit, (Mich.) -	42 19	83 00	62.5	55.0	49.5	43.5	38.5	36.5	36.5	43.0	49.5	47.5	43.5	47.0	45.0	75	31	53.10	S.
Fort Niagara, (N. Y.)	43 15	79 05	53.5	48.5	49.0	39.5	38.5	37.5	38.5	38.0	37.5	44.5	40.5	44.0	40.0	78	31	48.05	S.

Meteorological Register for the Month of NOVEMBER, 1822.

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH AND MEAN DAILY TEMPERATURE.															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Eastport, (Me.) -	44° 44′	67° 04′	37.5	32.5	31.5	32.0	39.5	38.5	39.5	39.0	32.5	34.5	44.5	48.5	38.0	40.5	37.5	40.0	34.5
Portland, (Me.) -	43 38	70 18	38.5	33.5	35.5	33.5	39.5	40.5	41.5	41.5	36.0	37.0	48.5	52.5	41.5	40.5	40.0	40.0	42.0
Ft. Constit'n, (N. H.)	43 04	70 49	42.0	38.5	38.5	36.5	37.5	46.0	44.5	47.5	45.5	38.0	48.5	56.5	48.0	44.5	43.5	44.5	47.5
Newport, (R. I.)	41 30	71 18	44.5	44.0	44.0	38.5	46.0	47.5	53.5	57.0	42.0	42.5	55.5	59.5	50.5	50.5	44.5	50.5	50.0
Philadelphia, (Pa.)	39 57	75 09	44.0	40.0	46.0	41.0	44.0	49.0	52.0	61.0	47.0	47.0	54.0	60.0	55.0	50.0	42.0	50.0	44.0
Annapolis, (Md.)	38 58	76 27	50.0	52.5	50.0	50.0	50.0	55.5	61.5	64.0	54.0	54.5	59.5	62.0	57.5	57.5	51.5	50.5	48 5
Norfolk, (Va.) -	36 58	76 16	58.0	52.5	56.5	57.5	66.5	68.5	62.0	59.5	64.0	64.5	63.5	60.5	63.5	60.5	53.0	53.0	58.5
Pensacola, (Fl.) -	30 24	87 14	66.5	66.5	72.5	65.5	63.5	70.5	75.5	78.0	75.5	75.0	72.5	61.5	54.0	53.0	57.0	65.5	69.0
Ft. St. Philip, (La.)	29 29	89 21	67.5	70.5	74.5	66.5	69.5	73.5	74.5	76.5	76.0	73.0	69.0	60.0	57.5	60.0	63.5	67.5	70.5
Baton Rouge, (La.)	30 26	91 18	67.5	70.0	71.5	67.5	69.0	72.0	73.5	75.5	75.5	62.5	63.5	55.0	55.5	54.5	55.0	62.0	64.5
Council Bluffs -	41 25	95 43	47.5	47.5	49.0	51.0	47.5	48.0	45.0	48.5	55.5	50.0	41.0	38.5	46.0	47.0	53.0	26.0	21.5
Fort St. Anthony	44 53	93 08	36.5	39.5	47.0	45.5	35.5	39.5	38.5	43.5	50.0	48.5	39.0	41.5	41.0	35.0	43.5	30.5	26.0
Prairie du Chien	43 03	90 52	32.5	43.0	44.0	47.5	49.0	43.5	42.5	46.5	51.5	52.0	42.0	34.0	32.5	35.0	48.5	47.5	38.0
Green Bay - -	44 40	87 00	31.5	41.5	34.0	40.5	38.5	37.5	44.5	45.0	47.5	53.5	43.0	36.0	39.5	33.5	31.5	32.5	32.5
Mackinac, (Mich.)	45 51	85 05	32.5	43.0	42.5	42.0	41.0	40.0	42.5	41.5	43.0	51.5	42.5	33.5	37.5	35.0	41.5	34.5	34.0
Detroit, (Mich.) -	42 19	83 00	42.5	49.0	45.5	42.0	50.5	53.5	59.0	55.0	55.5	62.5	63.0	48.0	52.0	44.5	44.5	55.5	53.5
Fort Niagara, (N. Y.)	43 15	79 05	37.5	37.0	42.5	39.0	44.0	43.0	47.5	44.5	42.5	49.0	50.5	45.5	42.0	44.0	38.0	49.5	44.0

Meteorological Register for the Month of NOVEMBER—*continued.*

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH, &c.													Maxim.	Minim.	Mean Temp.	Prevailing Winds.
			18	19	20	21	22	23	24	25	26	27	28	29	30				
Eastport, (Me.) -	44° 44′	67° 04′	34.5	43.0	36.0	35.5	32.5	36.0	30.5	28.5	33.0	28.5	40.5	42.5	49.5	58	15	37.03	N.
Portland, (Me.) -	43 38	70 18	31.5	45.5	45.5	40.0	37.5	37.0	31.5	32.5	36.5	29.5	39.0	41.5	48 0	56	21	39.25	N. E.
Ft. Constit'n, (N. H.)	43 04	70 49	42.0	45.5	46.5	45.5	41.0	39.5	33.0	34.5	39.5	33.5	42.0	48.0	51.5	60	26	42.89	N. W.
Newport, (R. I.)	41 30	71 18	50.5	48.5	48.0	56.0	45.5	48.0	37.0	43.0	41.0	38.0	49.5	50.5	60.0	64	29	47.95	S. W.
Philadelphia, (Pa.)	39 57	75 09	49.0	47.0	46.0	56.0	48.0	45.0	36.0	48.0	40.0	37.0	47.0	48.0	58.0	68	31	47.70	NW. NE.
Annapolis, (Md.)	38 58	76 27	55.5	55.0	52.0	56.5	57.5	53.0	49.5	52.0	47.5	44.0	53.0	52.5	60 5	68	40	53.82	N. E.
Norfolk, (Va.) -	36 58	76 16	59.5	59.5	55.5	63.0	68.5	56.0	54.0	53.0	54.5	48.5	61.5	62.5	72.5	77	45	59.58	N. E.
Pensacola, (Fl.) -	30 24	87 14	70.0	71.5	72.5	73.0	57.5	51.5	55.0	60.0	61.5	64.0	69.0	72.5	73.5	80	40	65.86	S. E.
Ft. St. Philip, (La.)	29 29	89 21	65.5	68.0	73.5	63.5	48.5	59.0	63.5	66.5	66.5	63.5	67.0	73.0	69.5	80	47	67.35	N.
Baton Rouge, (La.)	30 26	91 18	56.5	63.5	67.5	51.0	45.5	57.5	60.0	64.5	63.5	63.5	67.5	72.0	60.0	80	42	63.61	S.
Council Bluffs -	41 25	95 43	31.5	35.0	21.5	15.5	28.5	26.5	30.0	18.5	19.5	21.0	24.5	11.5	10.5	66	–6	35.34	N.
Fort St. Anthony	44 53	93 08	28.5	31.5	27.0	27.0	31.0	23.5	29.5	14.0	7.0	17.5	16.0	–3.5	–8 0	63	–23	30.58	N. W.
Prairie du Chien	43 03	90 52	25.5	34.0	32.5	31.5	28.5	31.0	33.5	20.5	13.0	18.0	19.0	16.5	–4.0	63	–12	34.26	N. W.
Green Bay - -	44 40	87 00	33.5	31.5	33.0	31.0	30.5	32.0	33.5	31.5	24.0	21.5	20.5	16.0	5.5	58	0	36.32	N. E.
Mackinac, (Mich.)	45 51	85 05	30.0	29.0	28.5	29.5	33.5	21.5	25.5	33.0	27.0	29.5	27.5	27.5	22.5	54	16	34.78	W.
Detroit, (Mich.) -	42 19	83 00	53.5	44.0	43.5	45.0	40.5	41.5	37.5	43.5	37.5	34.5	35.5	37.0	36.5	66	31	47.50	E.
Fort Niagara, (N. Y.)	43 15	79 05	41.5	42.5	41.5	41.5	36.5	38.5	28.5	38.5	36.0	34.5	34.5	37.5	38.0	58	28	41.03	S.

Meteorological Register for the Month of DECEMBER, 1822.

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH AND MEAN DAILY TEMPERATURE.																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Eastport, (Me.) .	44° 44′	67° 04′	54.0	30.0	25.0	21.5	30.5	19.0	16.5	37.5	27.5	36.5	16.5	29.5	28.5	46.5	30.5	6.5	30.5	15.5
Portland, (Me.) -	43 38	70 18	52.5	30.5	26.5	19.0	22.5	20.0	20.0	34.5	29.5	37.0	28.0	27.5	26.5	35.0	27.5	14.5	32.5	23.5
Ft. Constit'n, (N.H.)	43 04	70 49	58.5	34.5	30.0	21.5	23.5	23.5	22.5	34.5	30.0	37.0	38.5	31.5	30.5	35.0	27.5	14.5	36.0	26.0
Newport, (R. I.)	41 30	71 18	54.0	37.5	31.5	28.0	34.0	28.0	33.0	39.5	36.5	43.0	47.0	37.5	40.0	47.5	34.5	23.5	38.5	33.5
Philadelphia, (Pa.)	39 57	75 09	38.0	32.0	24.0	16.0	20.0	23.0	31.0	34.0	34.0	43.0	46.0	47.0	45.0	48.0	47.0	24.0	33.0	37.0
Annapolis, (Md.)	38 58	76 27	52.0	43.0	31.5	21.5	22.5	33.5	37.5	40.0	38.5	46.0	52.5	50.0	49.5	51.5	42.5	28.0	38.5	42.0
Norfolk, (Va.) -	36 58	76 16	65.0	43.5	39.5	31.5	38.5	40.0	46.0	48.5	44.5	50.0	59.5	58.5	60.5	63.5	49.0	40.5	46.0	52.0
Pensacola, (Fl.) -	30 24	87 14	46.5	48.0	36.5	31.5	45.5	48.5	50.5	52.5	52.5	56.5	59.0	62.0	66.5	68.5	57.5	61.5	61.5	68.5
Ft. St. Philip, (La.)	29 29	89 21	48.5	53.0	38.0	41.5	48.0	53.5	56.5	53.5	54.5	57.0	59.0	62.0	64.5	69.0	56.0	62.5	67.5	68.0
Baton Rouge, (La.)	30 26	91 18	37.5	41.5	26.5	31.0	40.5	43.5	56.5	54.5	54.0	56.0	57.5	61.5	64.5	63.5	51.0	59.5	67.5	69.5
Council Bluffs -	41 25	95 43	-3.0	-9.5	8.5	17.5	12.5	21.5	9.5	16.0	37.5	41.5	40.5	39.5	5.0	0.0	7.5	5.0	7.5	15.0
Fort St. Anthony	44 53	93 08	-9.5	-19.	5.5	12.5	-10.	3.5	-4.0	-0.5	31.5	37.5	31.5	34.5	2.5	-8.5	6.0	2.5	-5.5	9.0
Prairie du Chien	43 03	90 52	-7.0	-14.	-6.0	14.5	-1.5	10.5	7.0	5.5	22.5	35.0	32.0	33.5	13.0	3.0	14.0	13.5	2.5	10.5
Green Bay - -	44 40	87 00	-4.5	-11.	-1.5	18.5	2.5	3.0	6.0	7.5	29.5	37.5	40.0	35.5	39.5	10.5	7.5	20.0	-1.5	12.5
Mackinac, (Mich.)	45 51	85 05	19.0	10.5	15.0	19.0	6.5	15.5	20.5	21.0	32.0	39.5	31.5	32.5	43.5	10.5	5.5	22.5	14.0	21.5
Detroit, (Mich.) -	42 19	83 00	27·5	14.0	11.0	18.5	26.5	25.5	33.5	32.0	31.5	44.0	47.5	38.5	48.5	43.0	22.0	28.5	29.5	27.5
Fort Niagara,(N. Y.)	43 15	79 05	29.5	17.5	19.5	23.5	24.0	23.5	34.5	31.5	30.5	41.5	44.5	36.0	42.5	45.5	19.0	23.5	31.0	26.5

Meteorological Register for the Month of DECEMBER—*continued.*

PLACES OF OBSERVATION.	Lat. N.	Long. W.	DAYS OF THE MONTH, &c.												Maxim.	Minim.	Mean Temp.	Prevailing Winds.
			19	20	21	22	23	24	25	26	27	28	29	30	31				
Eastport, (Me.) -	44° 44′	67° 04′	37.0	24.5	16.5	19.5	−0.5	7.5	28.5	26.5	22.5	26.0	25·5	16.0	8.5	56	−4	24.64	N. W.
Portland, (Me.) -	43 38	70 18	36.5	31.0	24.0	22.5	7.5	12.5	22.0	21.5	24.5	26.5	26.5	19.5	15.0	58	4	25.70	S. W.
Ft. Constit'n, (N.H.)	43 04	70 49	41.5	32.5	24.5	28.5	14.5	15.5	27.0	24.0	24.0	28.0	27.0	25.5	19.5	61	8	28.51	N. W.
Newport, (R. I.)	41 30	71 18	48.5	37.5	33.5	34.0	19.5	20.5	31.5	28.5	33.0	33.5	32.5	27.5	22.5	62	12	34.47	N. W.
Philadelphia, (Pa.)	39 57	75 09	49.0	42.0	35.0	35.0	23.0	16.0	24.0	31.0	29.0	31.0	28.0	21.0	20.0	55	10	32.51	NW. NE.
Annapolis, (Md.)	38 58	76 27	51.5	43.5	39.5	40.5	32.5	32.5	39.0	41.0	34.0	31.5	31.5	32.0	24.5	60	16	38.51	N. W.
Norfolk, (Va.) -	36 58	76 16	62.5	56.5	50.0	50.0	43.5	32.0	39.0	43.5	48.0	43.5	43.5	40.5	36.0	70	25	47.35	N. E.
Pensacola, (Fl.) -	30 24	87 14	70.5	71.5	73.0	69.5	60.0	49.5	51.5	42.5	50.5	53.5	51.5	51.5	49.5	76	20	54.46	N. & E.
Ft. St. Philip, (La.)	29 29	89 21	70.5	71.5	70.5	70.5	62.0	54.0	56.5	48.5	49.5	50.0	50.5	54.5	60.0	77	36	57.71	N. E.
Baton Rouge, (La.)	30 26	91 18	70.5	71.5	68.5	65.5	50.5	43.5	44.0	39.5	39.5	41.0	40 5	45.5	46.5	74	18	51.77	N.
Council Bluffs -	41 25	95 43	9.5	1.0	1.5	4.0	5.5	6.5	1.5	12.5	18.5	12.0	12.5	17.5	25.0	55	−17	12.80	N.
Fort St. Anthony	44 53	93 08	2.5	−0.5	−9.5	−15.	−15.	−3.0	−9.5	5.5	6.0	1.5	−10.	2.0	22.5	46	−29	3.26	N. W.
Prairie du Chien	43 03	90 52	4.5	−0.5	3.5	2.0	−11.	−9.5	−6.5	−3.5	9.5	4.5	−9.0	−4.5	21.5	47	−22	6.20	N W.
Green Bay - -	44 40	87 00	14.5	2.5	7.5	−3.5	−10	−5.0	−2.5	2.0	10.5	9.5	−0.5	−6.5	9.5	44	−20	9.40	S. W.
Mackinac, (Mich.)	45 51	85 05	20.0	12.5	11.5	6.0	6.5	16.5	11.0	8.5	17.5	11.0	8.5	3.5	12.5	45	−1	16.97	W.
Detroit, (Mich.) -	42 19	83 00	37.5	30.5	31.5	22.5	16.5	14.0	19.5	13.5	21 5	24.0	23.0	20.5	21.0	52	7	27.25	S.
Fort Niagara, (N. Y.)	43 15	79 05	41.5	30.0	30.5	26.5	16.0	18.0	21.5	15.5	23.0	25.0	23.5	17.0	18.5	56	10	26.31	W.

Meteorological Register for the year 1822.

PLACES OF OBSERVATION.	Lat. N.	Long. W.	ANN'L. TEMP.			PREV'G. WINDS.
			Max.	Min.	Mean.	
Eastport, (Me.) -	44° 44′	67° 04′	88	–4	42.49	S. & N. W.
Portland, (Me.) -	43 38	70 18	99	–10	46.47	S. & S. W.
Ft. Constit'n, (N. H.)	43 04	70 49	86	–7	47.87	N. W. & S.
Newport, (R. I.)	41 30	71 18	86	0	52.09	S. W. & N. W.
Philadelphia, (Pa.)	39 57	75 09	89	–7.5	53.37	N. W. & S.W.
Annapolis, (Md.)	38 58	76 27	92	8	57.42	S. & N. W.
Norfolk, (Va.) -	36 58	76 16	88	20	63.45	S. W. & N'Y.
Pensacola, (Fl.) -	30 24	87 14	94	20	69.07	S. W.
Ft. St. Philip, (La.)	29 29	89 21	92	28	70.07	N. E. & S'Y.
Baton Rouge, (La.)	30 26	91 18	99	18	67.99	SOUTH.
Council Bluffs -	41 25	95 43	108	–17	50.67	NORTHERLY.
Fort St. Anthony	44 53	93 08	93	–29	44.12	N. W. & S. W.
Prairie du Chien	43 03	90 52	94	–22	45.20	N. W.
Green Bay - -	44 40	87 00	92	–23	44.06	S. W.
Mackinac, (Mich.)	45 51	85 05	99	–18	40.14	WEST.
Detroit, (Mich.) -	42 19	83 00	91	–14	53.07	SOUTH.
Fort Niagara, (N. Y.)	43 15	79 05	90	0	47.47	S. & W.

The following schedule exhibits the names, &c. of the gentlemen from whose records the Meteorological Register has been compiled.

Eastport, (Me.) -	Dr. James H. Sargent,	Assistant Surgeon.	
Portland, (Me.) -	Dr. Joseph Eaton, - -	Do.	Do.
Fort Constit'n, (N. H.)	Dr. Joseph Goodhue, -	Do.	Do.
Newport, (R. I.) -	Dr. William Turner, -	Do.	Do.
Annapolis, (Md.) -	Dr. Dennis Claude, -	Citizen.	
Norfolk, (Va.) -	Dr. Robert Archer, -	Assistant Surgeon.	
Pensacola, (Fl.) -	Dr. M. H. Elliot,* -	Surgeon.	
	Dr. J. P. C. M'Mahon,	Assistant Surgeon.	
Ft. St. Philip, (La.)	Dr. Squire Lea, - -	Do.	Do.
Baton Rouge, (La.)	Dr. B. F. Harney, -	Surgeon.	
Council Bluffs -	Dr. John Gale, - -	Do.	

* Deceased since 1822.

Fort St. Anthony -	Dr. Edward Purcell, -	Surgeon.
Prairie du Chien -	Dr. Charles Mendenhall,*	Assistant Surgeon.
Green Bay - -	Dr. W. V. Wheaton, -	Surgeon.
Mackinac, (Mich.) -	Dr. William Beaumont -	Assistant Surgeon.
Detroit, (Mich.) -	Dr. B. Delavan, - -	Surgeon.
Fort Niagara, (N. Y.)	Dr. William Ballard, -	Assistant Surgeon.

The mean temperature, &c. for Philadelphia, as recorded in the Register, were furnished by Mr. Reuben Haines, Corresponding Secretary of the Academy of Natural Sciences, Philadelphia, and Honorary member of the Royal Academy of Sciences of Turin, whose judgment and precision in observations of this nature entitle them to the fullest confidence.

It is believed that the foregoing tables exhibit as correct statements in relation to the temperature of the several places of observation, as any others that have hitherto been published on a scale equally comprehensive. It is well known that meteorological observations of every description are liable to numberless inaccuracies, both from defects in the instruments necessarily employed in making them, and from the want of a uniform mode of observation.

We are informed by the Surgeon General that the thermometers used at the military posts were made by Mr. Fisher of Philadelphia, who sustains a high reputation as a manufacturer of that instrument—and that they were uniformly furnished with metalic scales, with the exception perhaps of some few that have been procured to supply the place of those accidentally broken. The observations from which the temperature as recorded in the tables, has been deduced, were taken daily, at morning, mid-day, and evening, at which times the state of the weather, wind, &c. were particularly noted. But as it was not practicable to exhibit the whole in a form sufficiently condensed, much interesting matter relative to atmospheric phenomena, has necessarily been excluded from the register.

* Deceased since 1822.

Dr. Lovell, to whom the public is indebted not only for the register itself, but for the measures that have led to its construction, has instituted a course of meteorological observations, at the several military posts of the United States, which is to embrace a period of at least five years. When this shall have been performed, we have reason to believe that the data furnished therefrom, will lead to results relative to the climate of our country, more satisfactory than any that have hitherto been published.

S. H. L.

PART IV.

VOCABULARIES OF INDIAN LANGUAGES.

OF the following vocabularies, Mr. Say obtained that of the Killisteno language; the others were taken down by me. In order to enable the philologists to establish a comparison between the languages spoken by the Indians whom we saw, and those visited by the party that travelled to the Rocky Mountains, Major Long desired that the same system should be adopted, viz. that accompanied by Walker's pronouncing key. Had it not been for this circumstance, I would have adopted the German vowels, as they appear to me more simple and satisfactory. In the vocabularies which I obtained, I found the nasal sounds to be very frequent, and to be exactly the same as those in the French language; in order to distinguish them, I have used the sign n̄. It appeared likewise necessary to designate the long and short vowels in order fully to convey the Indian sounds; this I have attempted to do by the introduction of the accents; the grave (`) being used to distinguish the long, and the acute (') the short syllables. This has rendered our present system still more complicated, and has increased my regret that the valuable suggestions of Mr. Duponceau and Mr. Pickering* could not be adopted. The system which was proposed by the latter gentleman may probably be rendered more simple, and may doubtless be made the foundation of an easy and satisfactory method of noting vocabularies.

The great analogy which exists between the Sauk, Chippewa, and Cree languages, will be readily remarked; especially by those who will attempt to pronounce the words according to the key. The difference which they present to the eye will then vanish; thus the syllable *kwa* used by me has the same sound as that of *qua* used by Mr. Say. The Sauk vocabulary was taken from Wennebea, the Dacota from Renville, the Chippewa from Bruce, and the Killisteno from a half-breed of that nation.

WILLIAM H. KEATING.

* See Mr. Duponceau's "Dissertation on English Phonology," in the Transactions of the American Philosophical Society, N. S. vol. I. and Mr. Pickering's "Essay on the Orthography of the Indian Languages," in Vol. IV. of the Memoirs of the American Academy of Arts and Sciences.

Fāte, fâr, fàll, făt;—mė, mėt;—pine, pĭn;—nŏ, mŏve, nŏr, nŏt;—tūbe, tŭb, bŭll;—ŏil, pŏund.

	Sakewi, or Sauk.	Dacota, or Sioux.	Ochippewag, or Chippewa.	Killisteno, or Cree.
Head	wêshĭ	phå	ȯ'schtėkwân	ȯstickquân
Hair	nên'ȯssȯnė	nåssȯtå	mėnėsĭs	wȧshtȧkȧyȧh
Face	ė'skĭshėkȯkė'	ėtå	ȯ'schkĭñjĭk	
Forehead	nė'kėshĭ	ėtåĭ	ȯskâttĭk	ȯskȧtėk
Eye	n'ėskĭshėkwĭ	ĭshtå or wĭshtå	ȯ'schkĭñjĭk	same as Sauk
Ear	nėktȯwȧkȧyė	nȯhė	tâwȧk	ȯtȯwȧhkĭyȧh
Nose	n'ėkkĭw'ȧnė	pȯhė	schȧñgwėn	ȯskėnŭn
Nostrils			tȧnȧcŭm	
Lip		ĭshtė		
Mouth	n'ėktȯnė	ė	ȯ'tȯn	
Chin	nėktȧmȧkȧnė	ĭkȯ	ȯ'tȧmėkȧn or ȯ'kwȧkȯn	quȧscȯnȧvė
Tooth	nėpĭtȧñ	hė	wėbĭt	wėpėtȧh
Tongue	nėnȧnė'wė	chėjė	tȧnnȧunnėu	wȯtȧȧnė
Skin	n'ėwȧssȧmȧ	hȧ	ȯ'shȧki	wȧhsȧkki
Beard	mėsėtȯnȧkȧnȧn	pȯtȧhĭ	mėsȧkȯtȯnȧn or mėshė-tȯnȧn	mėȧstȯȧnȧh
Neck	nėkw'ȧkȧnė	tȧhȯ	kw'ȧgȧn	mėquȯtȯh
Throat	ȯkȯtȯȧkȧn	dȯtȧ		mėkȯtȧgŭn
Arm	n'ȧpȯnėn'ėk	ĭstȯ	ȯ'nĭk	mĭspėtŭn

Hand	nêp'ăkwînêtchê	nâpê	nênintchin	mètischê
Finger	êkwênênânêsikênêtchê, or the place where the hand divides	nâpsûkâzò	nêpênâhkkwânnè-nintchân	ânscôûcânânâh
Thumb	nêkêtchênêtchê, (large finger)	nâpsûhôñkà	gitchenínche	
Fore finger	nêtâônêkânêtschê, (pointing finger)		- no e g a n i n t e k	
Little finger	nêtêschkwânêtschê, (last finger)	âshtè		
Nail	nêskâshâ	shâkê	ò'schkîñgin	
Leg	nênânâ	hô	ò'kât	òskât
Thigh	nêb'òâm	chêchâ	ò'pwâm	òpwòîm
Foot	nêk'âchê	sêh'â	ò'sît	òsêtâh
Toes	nânêsêkânêsêtâkân	sêhûkâsâ or sèsûkâssâ	nèpênâhkkwânnèsîttân	
Copulation	êm'âkwê	tâwèch'êêkêtâ	òmânnân	mûshâwà
Penis	nênâkâyê	chê	wînnâk	âtâki
Testicles	m'ênêch'òâkê	îtkâ		
Vulva	mê'kêtênâkê	shôñ	âhkkêtîn	âki
Meat	hûy'âsê	tândò	wèyâs	wiâs
Blood	mêskwê	wâ	mîskw'à	mèkô
Heart	òt'à	chântà	ôtà'ê	mètà
Bone	ò'k'ânê	còhô	ôkân	òskânûh
Horn	wêwênê'k	hà	êshkân	âskûn
Chief	kêmâhkê'		òkèmâñ	
Man	nênêò	wèchâchê'tà	ènnênnè	nâhpâò

Fāte, fâr, fâll, fât;—mė, mėt;—pine, pin;—nō, mōve, nor, nôt;—tūbe, tŭb, bŭll;—oil, pound.

	Sakewi, or Sauk.	Dacota, or Sioux.	Ochippewag, or Chippewa.	Killisteno, or Cree.
Old man	pâshêtò	w'èchâhênchâ	âhkkėwînzė	
Soldier	kėshkėkwòikė	âkêchėtâ	shêmâgânish	
Woman	kwâòkė or kwiòkė	wėnòhênchâ	ėhkkwâ	squâòù
Old woman	mėtâmòân	wâhkâncâtân	mindėmòyâ	
Boy	kwėėssâ	òkė'chėtâ	kwėwėsiñs	nâhpâsîs
Friend	nâhkânâ	kêchù	nitshėkėwiñ	nėwichâwâgòn
Girl	skwêssâ	wėkòschkâ	ishkwâsiñs	squâsės
Magician	mânêtòòsîchė'kė'	wâhkân	mâmândâwis	
Father	nòssâ	âtâ	òs	nòhtâkwė
Mother	kêkėnân	ėmâñ	nîngâ (my mother)	nėcâhwė
Son	nėkwêssâ	mėchênckchė, (my son)	ò'kwis	nėcòsis
Daughter	tânės	mėchônckchė, (my daughter)	ò'tâhnnîss	
Pretty	wėw'ènnėss'èò	wâshtâ, means also good	ò'nėjish	kâtòwâssėsin
Ugly	mėânėsséò	shėchâ, means also bad	mânâtis	miâtsis
Child	âpėnòn	òkė'shėòpâ	â'pėnòchė	
Brother	lėssėmâ	mėsònkâ, my young brother	sângnâ	òsėmûh

Sister	nètèkwèmâ	tânkâchè, (my young sister)	mîssiñ	ȯmèsûh
God	tèpènèmènȯk	wâhkântânkâ	kàchâmânètȯ	kshâmânnîtȯ
Devil	mâtchè mânètȯ	wâhkânshèchâ	mâchâmânètȯ	mâtchâmânnîtȯ
Heaven	âpèmèkè	mâhkpèâ, (sky)	wâkwà or kèjik	kèsèk
Heat	wèshȯtin	dîndîtâ	kèzhittâi	kèsȯpâyyȯ
Cold	kè'sèân	snè	kissè'nâ	kèsîn
Rain	kè'mèân	mâhâjû	kèmèwân	kèmèwûn
Snow	âkȯn	wâ	kh'ȯn	kȯnûn
Ice	mè'kwâmîâ	châhâ		misquâmè
Hail	mâssickȯnân	wâssû	sâsâgân	
Summer	nèpènwè	mèdȯkètȯ	nèpin	nèpîn
Winter	pâpȯwè	wânîètȯ	pipp'ȯn	pèpûn
Spring	mè'nȯkkȯmû	wètȯ	sèkwân	
Autumn	tâkwâhkè	tânyètȯ	tâkwâkîn	
Morning	kèkèshèâp	hâhânâ	kèkèshâp	kèksèp
Evening	pâk'ȯtè	tâssètȯ	ȯnâgûsh	tâkȯsîn
Dawn of day	wâsâpânwè		wâssâyâ	
Day	kèshèkè	âmpâ	kèjik	kèsèkâhȯ
Night	tâpâkkè	hiyètȯ	tèpîk	tèbèskâhȯ
Sun	kèjèssȯâ	wè	kèsîs	pèshîm
Moon	tèpâkèkèjès	hiyètȯ wè	tèpikkèsîs	tèbèskâhpèshîm
Star	ân'âkw'âkè	wèchâkèpè	ânâng	âttâh
Earth	hâk'è	mâkâ	âhkè	âshkè
Water	nèpè	mènè	nèpè	nèpè

Fāte, fär, fâll, fåt;—mē, mĕt;—pine, pĭn;—nō, mŏve, nŏr, nôt;—tūbe, tŭb, bŭll;—oil, pound.

	Sakewi, or Sauk.	Dacota, or Sioux.	Ochippewag, or Chippewa.	Killisteno, or Cree.
Whiskey	ē'skwâtâwâbō	mēnēwâhkân mēnē pētâ by the Assiniboins	skôtâwâpō	
Steamboat	ē'skwâtâhēpâmōhōnmikōi			
Medicine	nâtâiwânōn	pējēâtâ	mâshkâpē	
Mysterious medicine		wâhkân	nēmâshkwâ	
Fire	ē'skwâtâ	pētâ	skôtâ	skôtâō
Wood	mētēkwē	chân	mētĭk	mēshtĭk
Tree	nâmâtâ			mēshtĭk
Bean	ânâchēmē	wâmânēchâ	ânēchēmĭn	
Leaf	tâtâpâcōân	wâhkpâ	ânēpish	nēpēâh
Maize	tâmin	wâmēnâhēsâ	mândâhmĭn	
Pumpkin	wâpĭkŭhnē'	wâmēnōn	âkŏssēmân	
Bark	ânâkâkwâ'	chânhâ	wēkwâs	kēskŭtēnō
Tobacco	sâimân	chāñdē	âssâmân	
Hazlenuts	kĭkēât'âhn	ōmāñ	pâkâhn	
Hill	pâkwâkkēwē'	hrâ	wâchēō	shâkâtēnâh

Valley	tătòăkĕ′	kâksèzâ	pâssâtènâū	òshâtènòù
River	sèpòâ	wâtâpâñ	sèpè	sèpè
Brook	sèpòhâ′hĕ′n			
Spring	tâhkĕppâ	mènèhòndâkâ, (running water)	mòkèchèwânèpĕk	mòpìchèwânèpà
Gelding	â′nkâtòskâshà′	shûktânkâsùsûwânĕchâ	âyâkwâ pâjàkòkâñgè	
Horse	kèchènèshòà	shûktânkâ, or shônkâwâhkân	pâjàkòkâñgè	mèshtâtìm
Mare	èckwâhâhèmâ	shûktânkâ wèyèdè	nòñjàpàjàkòkâñgè	kìshâhshìs
Colt	mâkk`òsâsà′	shûktânkâchènchâ	âyâpàpàjàkòkâñgès	
Dog	âlèmòñ	shônkhâ	ânnèmòsh	âhtìm
Wolf, prairie	nânàmòhâ	shûktòkèchâ	mâingân	mâhhèkân
Wolf, large	kèchèmòhâ			
Fox	wâk`òâ′	sòhèdâ	wâkôsh	
Bird	wìshkâmôñ	zìtkâ	pènâshè	pèâshès
Turkey	pènâôñ	zìchâtânkâ	mèzìssâ	
War Eagle	kèttèwâ	wâmèndè	mèkìssâ	
Buck Elk	kèchèmâ	hâhâkâ	âyâpàòmòshkòs	
Doe	môschâw`à	hòpân	nòñjàòmòshkòs	
Egg	wâwân	wèntèkâ		wâhwè
Buck deer	è′yâpâ	tâmèndâkâ	âyâpàwâwâshkâsh	
Doe	ò′kò wâ	tâwèènâ	nòñjàwâwâshkâsh	
Fawn	kâtâkânân	tâmèndèchènchâ	wâwâskâshìns	
Fish	nèmâs	hòhân	kèk`òn	kènòsàò
Squirrel	ânèkwâ	zèchâ	chètâmòn	

Fāte, fâr, fâll, făt;—mė, mėt;—pīne, pĭn;—nō, mōve, nŏr, nŏt;—tūbe, tŭb, bŭll;—oil, pound.

	Sakewi, or Sauk.	Dacota, or Sioux.	Ochippewag, or Chippewa.	Killisteno, or Cree.
Prairie dog		pĭshĭnzâ		
Snake	mânėtō	wămėndŭskâ	kėnăpĭk	shėshėkwăō
Bison	nė'n'ėssōă	tătănkâ	pėjĭkkă	ėăhpăcōmōshtŭsh
Black-tailed deer		tăhėnchâ	măkătăwănăōsh	
Bear	mŏkkwâ	wăhănkshėchâ and mătō	măckwâ	mŭshqwăh
Raccoon	ăssėpănăn	wėchâ	ėssăpăn	
Louse	wăpĭkkwăkė	hėhâ	ĭkkwâ	ėhquăh
Antelope		tătōkâ		
Skunk	shėkăkw'ă	măkhâ	shėkăhk	
Flea	pėpėk'w'ă	hâ	păpĭk	pėpėk
Muskrat	ăsŏskw'ă	sĭntōpă	wăshăshk	
Rabbit	măshōwâ	mŭstinchâ		wăhpŏs
Bow	măctăă	ėtăsĭpă	mėtĭkwâp	ătchăpė
Arrow	ămĭn	wăhintăpă	mėtĭkkwănwă	ăttŏs
Knife	mătės	ĭsăn or mĭnâ	mŏkkŏmmăn	mŏkŏmăn
Pipe	pwăkăn	chăndōpă	pwăgăn	mŭspwăhkŏn
Canoe	chėmăn	wătă	thėmăn	ŏsė

House	wėkėåb	tėbė	wėkėwåm	wûsquåćkǒn
Copper	môskwåpėkwė′	månzâzė	ǒsåwåbîk	
Stone	åsėnnė	ėâĩ	âssîn	ėsînė
Body	wėyåwė			
Iron	pėyåpėkkwė	måzå	pėwåpîk	pėwåpîshk
Yes	håhå	hân	håhin	håhėh
No	håkǒwå	hėhâ	kåwîn	nėhmåh
None	håkwâyå	tǒåshėnė ? or wânėchâ ?	kåwînåwėyå	nėhmåtǒquǒû
White	wåpėskåyå	skâ	wåpîshkâ	wåhpîshkåwǒ
Red	mǒskwå	shâ or dûtâ	mîskwâ	mėhquåǒ
Black	måkåtåwå	sâpâ	måkâttà	kûskėtâwao
Blue	ė′skėpåkėâ	tǒ	ǒshåwôhkwâ	shėpåtǒqwâ, (green)
Yellow	ė′ssåwå	zė	såwâ	shåwâhǒ
Light	kåchėmėsåkwåtė	ǒjânjân	kėjîk	kėsėgǒstâgû
Darkness	pėkkwåtâyåwė	pâsâ	tėpik	ėquǒsquǒ
I, (ego)		mėå or mîsh	nîn	nėyâh
Me	nėnâ	same		
One	nėkǒtė	wâjėdân	pâjîk	pâàyûk
Two	nîsh	nǒpâ	nîj	nėshûh
Three	nėssǒå	yâmênâ	nėssǒå	nėshtǒ
Four	nėåwå	tǒpâ	nėwîn	nååwǒ
Five	nėånânǒn	zâpâtân	nânân	nėânûn
Six	kǒtǒåshėc	shâkpė	gǒtǒåssǒ	nėgǒtǒâhsėk
Seven	nǒwėc	shâkǒ	nînjǒåssǒå	tâpâcǒh
Eight	shǒåshėc	shâhėndǒâ	nîshwåssǒ	åânânėǒ
Nine	shâc	nǒptûânkâ	shângåssǒå	tâkâts

INDIAN VOCABULARIES.

Fāte, fâr, fåll, fât;—mė, mėt—pine, pĭn;—nŏ, mŏve, nŏr, nŏt;—tūbe, tŭb, bŭll;—oĭl, pŏund.

	Sakewi, or Sauk.	Dacota, or Sioux.	Ochippewag, or Chippewa.	Killisteno, or Cree.
Ten	kwėchå	wėkåchėmėnå	mėtåssŏå	mėtåtå
Eleven	nėkŏtėnėssåå	åkėwåjė	åshėpåjik mėtåssŏå (ten with one)	påågŏsåp
Twelve	nėshėnėssŏå	åkėnŏpå	åshė nij mėtåssŏå (ten with two)	nėsŏsåp
Soul	nėnŭnkånŏn	nåhė		
Beaver		chåpå	åmĭkk	
Otter			nėkĭk	
Hell			kåkėkåmåchĭshkŏtå	
Clouds		måkpėåshŏtė		
Great Bear, (star)		wėchåkėhŏhåpå		
North		wåsėåtå		
South		ėtŏkåhå		
East		wėhåhėåpåtå, (rising sun)		
West		wėhŏhpėåtå, (setting sun)		
Hundred		ŏpånwåhrå		

Thousand	kȯkȯtȯpȧwȧhrȧ		
Bank, (of a river)	mȧyȧ		
Meat of fish		ȯskȯû	
Fog		ȧwȧn	
Hollow		wȧhnȧkkȧ	
Moose		mȯīs	
Brass		ȯsȧwȧbĭkkȧsĭn, (yellow stone)	
Wild rice	psė	mȧnȯmĭnȧn	
Peas		ȧnėchėmĭnȧn	
Service berry		ȯsȧkwȧhkȯmĭnȧn	
Berry, (of any kind)		mĭnȧn	
Nobody		kȧwĭnȧwĭyȧ	
You			kėyûh
Him			wėyûh
Us			nėyȧn

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